AIRCRAFT TYPE B777

AIRWORTHINESS DIRECTIVES (AD) STATUS

AD Number	Effective Date	Revised Date	Signature	Remark (Disuse)
2021-23-12	2021.12.09	2021.12.24	박형빈	Deleted by AD 2023-10-02 (MAY 26, 2023)
2022-03-05	2022.01.27	2022.01.28	정숙영	Deleted by AD 2023-12-05 (JUN 21, 2023)
2023-12-05	2023.06.21	2023.06.27	정연오	

*** 개정 관리 방법**

1. 신규 AD 삽입 시, 표 안의 제목에 맞게 AD number, Effective Date, Revised Date를 기록 및 서명하고 REMARK (Disuse) 란은 비워둘 것.
2. AD 삭제 시 Remark (Disuse) 란에 "Deleted by 근거"를 기입할 것.

(2) Will not affect intrastate aviation in Alaska, and

(3) Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

List of Subjects in 14 CFR Part 39

- Air transportation
- Aircraft
- Aviation safety
- Incorporation by reference
- Safety

The Amendment

Accordingly, under the authority delegated to me by the Administrator, the FAA amends 14 CFR part 39 as follows:

PART 39—AIRWORTHINESS DIRECTIVES

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

§ 39.13 **[Amended]**

2. The FAA amends § 39.13 by:

a. Removing Airworthiness Directive (AD) 2022–03–05, Amendment 39–21922 (87 FR 4150, January 27, 2022), and

b. Adding the following new AD:

2023–12–05 The Boeing Company: Amendment 39–22463; Docket No. FAA–2023–0670; Project Identifier AD–2022–01427–T.

(a) Effective Date

This airworthiness directive (AD) is effective June 21, 2023.

(b) Affected ADs

This AD replaces AD 2022–03–05, Amendment 39–21922 (87 FR 4150, January 27, 2022) (AD 2022–03–05).

(c) Applicability

This AD applies to all The Boeing Company airplanes identified in paragraphs (c)(1) and (2) of this AD, certificated in any category.

(1) Model 747–8F and 747–8 series airplanes.

(2) Model 777–200, –200LR, –300, –300ER, and 777F series airplanes.

(d) Subject

Air Transport Association (ATA) of America Code 34, Navigation.

(e) Unsafe Condition

This AD was prompted by a determination that radio altimeters cannot be relied upon to perform their intended function if they experience interference from wireless broadband operations in the 3.7–3.98 GHz frequency band (5G C-Band), and a determination that this interference may affect other airplane systems using radio altimeter data, including the pitch control laws, including those that provide tail strike protection, regardless of the approach type or weather. The FAA is issuing this AD to address missing or erroneous radio altimeter data, which, in combination with multiple flight deck effects, could lead to loss of continued safe flight and landing.

(f) Compliance

Comply with this AD within the compliance times specified, unless already done.

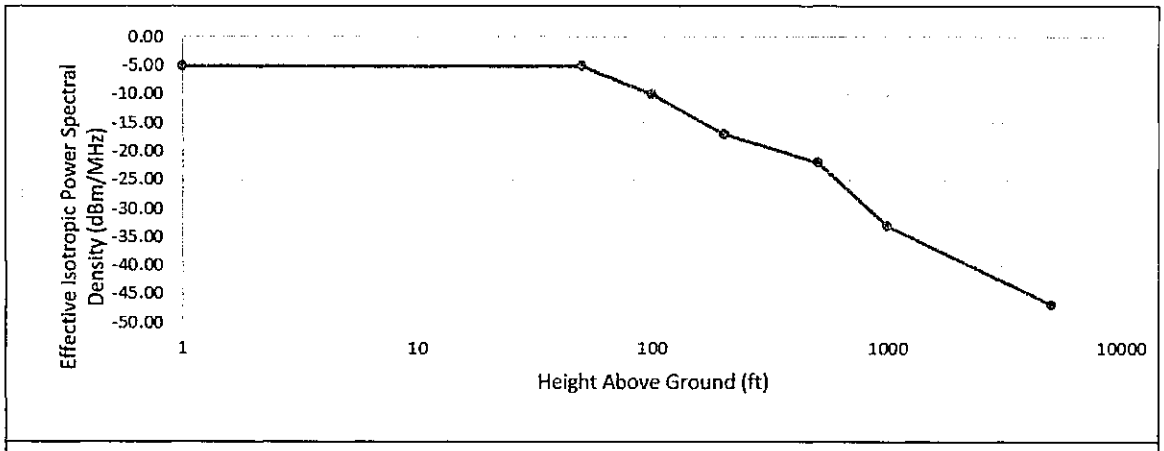
(g) Definitions

(1) For purposes of this AD, a "5G C-Band mitigated airport" (5G CMA) is an airport at which the telecommunications companies have agreed to voluntarily limit their 5G deployment at the request of the FAA, as identified by an FAA Domestic Notice.

(2) For purposes of this AD, a "radio altimeter tolerant airplane" is one for which the radio altimeter, as installed, demonstrates the tolerances specified in paragraphs (g)(2)(i) and (ii) of this AD, using a method approved by the FAA.

(i) Tolerance to radio altimeter interference, for the fundamental emissions (3.7–3.98 GHz), at or above the power spectral density (PSD) curve threshold specified in figure 1 to paragraph (g)(2)(i) of this AD.

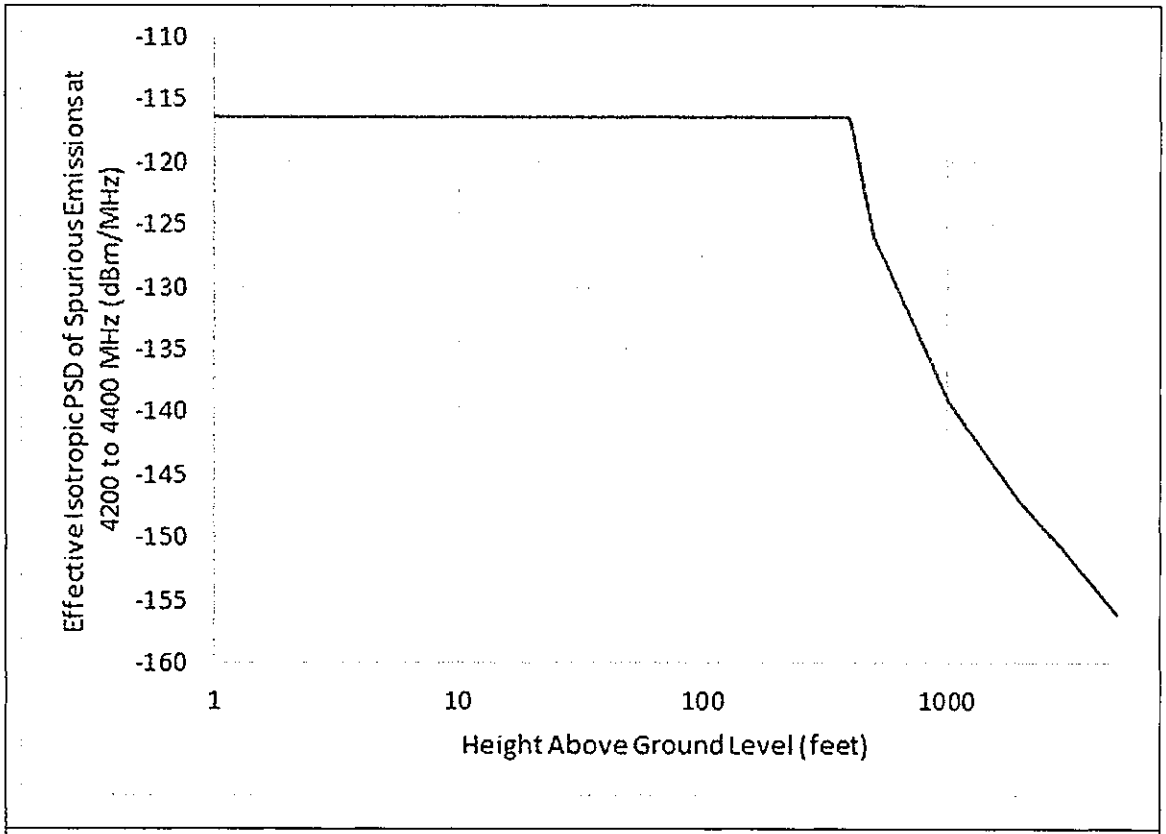
Figure 1 to paragraph (g)(2)(i)— *Fundamental Effective Isotropic PSD at Outside Interface of Aircraft Antenna*



Height above ground (ft)	Effective Isotropic PSD (dBm/MHz)
Aircraft on the ground	-5
50	-5
100	-10
200	-17
500	-22
1000	-33
5000	-47

(ii) Tolerance to radio altimeter interference, for the spurious emissions (3.7–3.98 GHz), at or above the PSD curve threshold specified in figure 2 to paragraph (g)(2)(ii) of this AD.

Figure 2 to paragraph (g)(2)(ii)— *Spurious Effective Isotropic PSD at Outside Interface of Aircraft Antenna*



Aircraft Altitude (ft AGL)	Effective Isotropic PSD (dBm/MHz)
1	-116.50
400	-116.50
500	-126.00
1000	-139.00
2000	-147.00
3000	-151.00
5000	-156.00

(3) For purposes of this AD, a "non-radio altimeter tolerant airplane" is one for which the radio altimeter, as installed, does not demonstrate the tolerances specified in paragraphs (g)(2)(i) and (ii) of this AD.

(h) Retained Airplane Flight Manual (AFM) Revision

This paragraph restates the requirements of paragraph (g) of AD 2022–03–05. Within 2 days after January 27, 2022 (the effective date of AD 2022–03–05): Revise the Limitations Section of the existing AFM to include the information specified in figure 3 to paragraph (h) of this AD. This may be done by inserting a copy of figure 3 to paragraph (h) of this AD into the existing AFM.

Figure 3 to paragraph (h)— *AFM Limitations Revisions*

(Required by AD 2022-03-05)

Approaches and Landings in the Presence of Radio Altimeter 5G C-Band Interference

Dispatching or releasing to airports, and approaches or landings on runways, in U.S. airspace in the presence of 5G C-Band wireless broadband interference as identified by NOTAM is prohibited (NOTAMs will be issued to state the specific airports or approaches where the radio altimeter is unreliable due to the presence of 5G C-Band wireless broadband interference).

(i) New Requirement: AFM Revision for Non-Radio Altimeter Tolerant Airplanes

For non-radio altimeter tolerant airplanes, do the actions specified in paragraphs (i)(1) and (2) of this AD.

(1) On or before June 30, 2023, revise the Limitations Section of the existing AFM to include the information specified in figure 4 to paragraph (i) of this AD. This may be done by inserting a copy of figure 4 to paragraph (i) of this AD into the existing AFM. Incorporating the AFM revision required by this paragraph terminates the AFM revision required by paragraph (h) of this AD.

(2) Before further flight after incorporating the limitations specified in figure 4 to paragraph (i) of this AD, remove the AFM revision required by paragraph (h) of this AD.

Figure 4 to paragraph (i)— *AFM Revision for Non-Radio Altimeter Tolerant Airplanes*

(Required by AD 2023-12-05)

Approaches and Landings in the Presence of Radio Altimeter 5G C-Band Interference

Due to the presence of 5G C-Band wireless broadband interference, dispatching or releasing to airports, and approaches or landings on runways, in the contiguous U.S. airspace is prohibited.

(j) New Requirement: AFM Revision for Radio Altimeter Tolerant Airplanes

For radio altimeter tolerant airplanes, do the actions specified in paragraphs (j)(1) and (2) of this AD.

(1) On or before June 30, 2023, revise the Limitations Section of the existing AFM to include the information specified in figure 5 to paragraph (j) of this AD. This may be done by inserting a copy of figure 5 to paragraph (j) of this AD into the existing AFM. Incorporating the AFM revision required by this paragraph terminates the AFM revision required by paragraph (h) of this AD.

(2) Before further flight after incorporating the limitations specified in figure 5 to paragraph (j) of this AD, remove the AFM revision required by paragraph (h) of this AD.

Figure 5 to paragraph (j)— *AFM Revision for Radio Altimeter Tolerant Airplanes*

(Required by AD 2023-12-05)

Approaches and Landings in the Presence of Radio Altimeter 5G C-Band Interference

Due to the presence of 5G C-Band wireless broadband interference, dispatching or releasing to airports, and approaches or landings on runways, in the contiguous U.S. airspace is prohibited unless operating at a 5G C-Band mitigated airport as identified in an FAA *Domestic Notice*.

(k) Alternative Methods of Compliance (AMOCs)

(1) The Manager, Operational Safety Branch, FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. In accordance with 14 CFR 39.19, send your request to your principal inspector or responsible Flight Standards Office, as appropriate. If sending information directly to the manager of the Operational Safety Branch, send it to the

attention of the person identified in paragraph (l) of this AD. Information may be emailed to: *AMOC@faa.gov*.

(2) Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the responsible Flight Standards Office.

(3) AMOCs approved for AD 2021–23–12, Amendment 39–21810 (86 FR 69984, December 9, 2021), providing relief for specific radio altimeter installations are approved as AMOCs for the requirements specified in paragraph (h) of this AD until June 30, 2023.

(l) Related Information

For more information about this AD, contact Brett Portwood, Continued Operational Safety Technical Advisor, COS Program Management Section, Operational Safety Branch, FAA, 3960 Paramount Boulevard, Lakewood, CA 90712–4137; phone: 817–222–5390; email: *operationalsafety@faa.gov*.

(m) Material Incorporated by Reference

None.

Issued on June 9, 2023.

Michael Linegang,

Acting Director, Compliance & Airworthiness Division, Aircraft Certification Service.

BILLING CODE 4910–13–P

[FR Doc. 2023–13156 Filed 6–16–23; 11:15 am]

BILLING CODE 4910–13–C

AFM SUPPLEMENT STATUS

NO	SUBJECT	Annex Date	REMARK
1	AUTOMATIC ELT	30 Mar 2004	
2	EMERGENCY LIGHT	16 May 2007	
3	IFE	27 Feb 2017	

EAD Aerospace
Chemin des Vergers
84240 La Bastide Des Jourdans
France

EAD Inc
13134 W, 159th Street, Homer Glen
IL 60491
United States of America

FAA APPROVED

AIRPLANE FLIGHT MANUAL SUPPLEMENT

BOEING

B777-200 Series Aircraft

SERIAL NUMBER: _____

REGISTRATION NUMBER: _____

This supplement must be attached to the FAA Approved Airplane Flight Manual. The information contained herein supplements or supersedes the basic Flight Manual only in those areas listed, when the aircraft is modified by STC ST01950CH, installation of an ELTA™ ADT 406 AF/AP Emergency Locator Transmitter (ELT) system. For limitations, procedures and performance data not contained in this supplement, consult the basic Airplane Flight Manual.

FAA APPROVED: Joseph C Mies
for Charles L. Smalley, Manager
Systems & Flight Test Branch
Chicago Aircraft Certification Office
Des Plaines, IL

Log of pages

Issue	Pages	Description of revision	Checked by CVE	Date	FAA approved (*)
A	ALL	First release	J.M. ISAMBERT	19 SEP 2003	J Mess

(*) For Manager, Chicago Aircraft Certification Office, Federal Aviation Administration, Central Region.

Table of Contents

1. GENERAL

The ADT 406 AF/AP Emergency Locator Transmitter (ELT) utilizes three frequencies to transmit a distress signal. Transmission on 121.5 MHz and 243.0 MHz allows typical locating accuracies within 7-10 miles. The third frequency, 406.028 MHz utilizes the COSPAT-SARSAT satellite tracking system which narrows the search area to approximately 1 mile.

The COSPAS-SARSAT satellite system is designed so that each point on the earth is visible to a satellite every two hours.

Use of this transmitter is authorized only for situations of grave and imminent danger.

The ELT may be activated either manually or automatically.

2. LIMITATIONS

The ELT must be self tested at least once each month. (Testing is accomplished by depressing the **TEST/RESET** push-button on the Remote Control Panel).

NOTE: The battery servicing period has been designed for a daily self test. Do not perform the test more than once every day.

The ELT does not need to be manually activated for test purposes. Manual activation, if desired, is limited to the first five minutes of the hour and is to be of very short duration (3-5 seconds). (See Normal Operating Procedures).

NOTE: The ELT only activates (broadcasts on 121.5, 243.0 and 406 MHz) after completing the self test (approximately 30 seconds). The live broadcast should be limited to 3-5 seconds.

3. OPERATING PROCEDURES

3.1 EMERGENCY PROCEDURES

No change to basic Airplane Flight Manual.

3.2 ABNORMAL PROCEDURES

3.2.1 UNINTENTIONAL ACTIVATION

If the ELT is unintentionally activated,

- Press the **TEST/RESET** push-button to deactivate.
- Advise Air Traffic Control (ATC) of the unintentional operation.

NOTE: The ELTA™ ELT transmits an identification on 406.028 MHz that is used to positively identify the aircraft. Therefore advising ATC of any unintentional activation, including the aircraft registration is required.

3.3 NORMAL PROCEDURES

3.3.1 ELT ACTIVATION

The ELT may be activated using three methods :

3.3.1.1 Auto Activation

- The ELT incorporates a self-contained activation switch that is sensitive to acceleration forces along the line of flight.
- This automatically activates the ELT and the **TX** indicator light on the ELT should illuminate.
- Monitor frequency 121.5 MHz to confirm activation, if possible.

3. OPERATING PROCEDURES (CONTINUED)

3.3.1.2 Manual Activation from Cockpit

- Select the **ARMED/ON** switch on the cockpit control to **ON**.
- This manually activates the ELT and the **ELT ON** indicator light should illuminate.
- Monitor frequency 121.5 MHz to confirm activation, if possible.

NOTE: The ELTA™ ELT performs an autotest function when manually activated. This test function delays ELT transmissions for approximately 30 seconds as required by COSPAS-SARSAT satellite system.

3.3.1.3 Manual Activation from ELT Transmitter

- Move the three-position toggle switch from **OFF** or **ARMED** to **ON**.
- This manually activates the ELT and the **TX** indicator light on the ELT should illuminate.
- Monitor frequency 121.5 MHz to confirm activation, if possible.

3.3.2 ELT DEACTIVATION

3.3.2.1 Deactivation from Cockpit

- In the cockpit, ensure the ARMED/ON switch is in the **ARMED** (guarded) position.
- On the ELT, ensure the three-position toggle switch is in the **ARMED** position.
- Press the **TEST/RESET** push-button on the Cockpit Control Panel.
- The **ELT ON** indicator light on the control panel should extinguish.
- Monitor frequency 121.5 MHz to confirm deactivation, if possible.

3. OPERATING PROCEDURES (CONTINUED)

3.3.2.2 Deactivation from ELT Transmitter

- On the ELT, place the three-position toggle switch to **OFF** and then to **ARMED**.
- The **TX** indicator light on the ELT should extinguish.
- Monitor frequency 121.5 MHz to confirm deactivation, if possible.

4. PERFORMANCE

No change to basic Airplane Flight Manual.

Boeing 777 - Series

Airplane Flight Manual Supplement

Lufthansa Technik
Doc. No. A-33-07/530-AFM
Initial Release, dated May16/07

Lufthansa Technik AG
P.O. Box 63 03 00
Dept. HAM WY5
D-22313 Hamburg
Federal Republic of Germany

APPROVED AIRPLANE FLIGHT MANUAL SUPPLEMENT

FOR AIRCRAFT EQUIPPED WITH THE NON-ELECTRIC FLOOR PATH MARKING SYSTEM GUIDELINE COLOURFIT

BOEING 777 - Series

THIS SUPPLEMENT MUST BE ATTACHED TO THE APPROVED AIRPLANE FLIGHT-MANUAL WHEN THE AIRPLANE IS MODIFIED IN ACCORDANCE WITH *LUFTHANSA TECHNIK SUPPLEMENTAL TYPE DEFINITION DOCUMENT* NO. STDD33-07/03M OR LATER AMENDMENTS.

The information contained herein supplements or supersedes the basic Airplane Flight Manual; for limitations, procedures and performance informations not contained in this document, consult the basic Airplane Flight Manual (if applicable).

Approved by EASA under Approval No.: EASA.A.S.03127 on 30 November 2007

Signed by "Ladwig, Peter Klaus Rudi"
Datum: 2007-12-04 14:40:01 +01'00'

Lufthansa Technik AG
Design Organisation
EASA PART 21 Subpart J
Office of Airworthiness
No. EASA.21J.019

Record of Revision

Rev No.	Issue Date	Insertion Date	Insertion by
IR	May 16/07		

Rev No.	Issue Date	Insertion Date	Insertion by

List of Effective Pages

Chapter/Section	Page	Date
Cover Page	1	May 16/07
Title	1	May 16/07
Record of Revisions	1	May 16/07
List of Effective Pages	1	May 16/07
Table of Contents	1	May 16/07
Section 1 - Limitations	1	May 16/07
Section 2 - Non-Normal Procedures	2	May 16/07
Section 3 - Normal Procedures	3	May 16/07
Section 4 - Performance	4	May 16/07

Table of Contents

Section 1 - Limitations

1. General

A. The following limitations apply for photoluminescence emergency floor path marking system installed per Lufthansa Technik STDD Doc. No. STDD33-07/03M:

To charge the photoluminescent light strips the cabin light must be switched to the bright position prior to off blocks of each flight for at least:

Case A: 15 minutes charging time results in limitation of 7 hours and 30 minutes maximum dark cabin period
To charge the photoluminescent light strips cabin lights must be switched to the bright position for at least 15 minutes before take-off during cabin preparation and boarding phase prior an overnight flight. The maximum length of a dark cabin period without recharging the system as described above is 7 hours and 30 minutes.

Case B: 20 minutes charging time results in limitation of 9 hours maximum dark cabin period
To charge the photoluminescent light strips cabin lights must be switched to the bright position for at least 20 minutes before take-off during cabin preparation and boarding phase prior an overnight flight. The maximum length of a dark cabin period without recharging the system as described above is 9 hours.

Case C: 30 minutes charging time results in limitation of 10 hours maximum dark cabin period
To charge the photoluminescent light strips cabin lights must be switched to the bright position for at least 30 minutes before take-off during cabin preparation and boarding phase prior an overnight flight. The maximum length of a dark cabin period without recharging the system as described above is 10 hours.

B. Note: Any cabin illumination in position bright during flight is considered as charging time.

Section 2 - Non-Normal Procedures

1. General

   A. Procedures for activating the emergency light switch in case of an evacuation remain the same. No change to basic Airplane Flight Manual.

Section 3 - Normal Procedures

1. General

A. The photoluminescence floor path lighting system consists of a continuous strip down both sides of the aircraft aisle. The system is non-electric so it can not be turned on or off. The photoluminescence strips absorb energy when exposed to light, and gradually release this energy. It takes 15 to 30 min. of exposure to cabin lighting to completely charge the system (refer to Section 1 of this AFM-S). During the daylight hours, you will not see the glow of the floor lighting. However, in total darkness, you will see a greenish 'glow'. THIS 'GLOW' CANNOT BE TURNED OFF!

The major differences in the new system and the system formerly installed are:
• The photoluminescence floor path lighting is installed down both sides of the aircraft aisle.
• The system is one continuous strip and not a series of light bulbs and lenses.
• At each overwing exit, the strip turns into the row and extends up to outboard seat track toward the window exit.

B. In order to keep the system fully charged, be sure to follow the instruction of Section 1 of this AFM-S before off blocks of each flight.

Section 4 - Performance

1. General

   A. No change to basic Airplane Flight Manual.

Delta Engineering
13 DRBA Way
New Castle County Airport
New Castle, DE 19720

Document No.: 0643-07743-2279
Revision: A

FAA Approved

Airplane Flight Manual Supplement

For

Boeing 777-200 Series

S/N: _____

With

Panasonic Avionics Corporation
In-Flight Entertainment System

This supplement must be attached to the approved Airplane Flight Manual when the airplane is modified by the installation of a Panasonic In-Flight Entertainment System (IFE) in accordance with FAA STC ST02920NY.

The information contained herein supplements or supercedes the information contained in the Airplane Flight Manual in the areas listed herein. For limitations, procedures and performance information not contained in this supplement, consult the Airplane Flight Manual.

FAA Approved: _____

Jonathan E. Moritz
ODA Administrator
ODA-800728-NE

FAA Approved Date: Feb. 27, 2017

Log of Revisions

Revision	Pages	Description	FAA Approved	Date
-	1 – 8	Original Release	See revision -	Nov. 10, 2012
A	1 to 8	Updated to IFE instead of eX2	Jonathan E. Moritz ODA Administrator ODA-800728-NE	Feb. 27, 2017

FAA Approved Date: Feb. 27, 2017

Table of Contents

FAA Approved Date: Feb. 27, 2017

Introduction

This Airplane Flight Manual Supplement is for installation of a Panasonic In-Flight Entertainment System which provides passengers with audio, video and in-seat power.

FAA Approved Date: Feb. 27, 2017

Section 1 Certification Limitations

No new or changed limitations.

FAA Approved Date: Feb. 27, 2017

Section 2 Non-Normal Procedures

2.1 EMI/RFI

Condition: Possible EMI and RFI interference could be noise in communication systems, squelch breaks, display flickers, blanking displays, waves, etc.

If condition remains or if immediate action is required:

- Remove power to the Panasonic IFE (In-Flight Entertainment System) by selecting the "IFE/PASS SEATS" switch to OFF.

Note: *EMI – Electromagnetic interference; RFI - Radio Frequency Interference*

Section 3 Normal Procedures

3.1 Panasonic IFE (In-Flight Entertainment) On/Off

Power can be removed by turning the “PASS/IFE SEATS” switch located in the overhead panel in flight deck to the OFF position.

Section 4 Performance

No change to basic airplane flight manual

FAA Approved Date: Feb. 27, 2017

United States of America
Department of Transportation
Federal Aviation Administration

Supplemental Type Certificate

Number ST02920NY

This certificate, issued to: Delta Engineering Corporation
13 DRBA Way
New Castle, Delaware 19720

certifies that the change in the type design for the following product with the limitations and conditions therefor as specified hereon meets the airworthiness requirements of Part 25 of the Federal Aviation Regulations.

Original Product — Type Certificate Number: T00001SE
Make: Boeing
Model: 777-200 Series

Description of Type Design Change:
Installation of a Panasonic In-Flight Entertainment System in accordance with Delta Engineering Master Data List 0143-07738-2279 Revision A dated Feb. 28, 2017 or later FAA approved revisions to Delta Engineering Master Data List previously listed. The Instructions for Continued Airworthiness and Airplane Flight Manual Supplement as listed on the Master Data List is required with this installation.
Limitations and Conditions:

1. If the holder agrees to permit another person to use the certificate to alter the product, the holder shall give the other person written evidence of that permission.
2. Compatibility of this design change with previously approved modifications must be determined by the installer.

(See Continuation Sheet 3)

This certificate and the supporting data which is the basis for approval shall remain in until effect surrendered, suspended, and revoked, or a termination date is otherwise established by the Administrator of the Federal Aviation Administration.

Date of Application: July 8, 2011
Date of issuance: November 12, 2012
Date reissued:
Date amended: March 4, 2017

By direction of the Administrator

Signature:
Title: Jonathan E. Moritz
ODA Administrator
ODA-800728-NE

United States of America
Department of Transportation
Federal Aviation Administration

Supplemental Type Certificate

INSTRUCTIONS: The transfer endorsement below may be used to notify the appropriate FAA Aircraft Certification Office of the transfer of this Supplement Type Certificate. The FAA will reissue the certificate in the name of the transferee and forward it to him.

Transfer Endorsement

Transfer the ownership of Supplement Type Certificate Number:

To (Name and address of transferee):

From (Name and address of grantor):

Extent of Authority (if licensing agreement):

Date of transfer:

Signature of grantor: _____

Limitations and Conditions:

3. Configuration TL10654 requires FAA STC ST02919NY-D.
4. Configuration TL10893 requires FAA STC ST04357AT, Zodiac Service Bulletin 1047G-25-08, Boeing Minor Change E251302-X, Boeing Service Bulletin 777-24-0145, JAMCO Service Bulletin OZOR7-25-3370, GE Service Bulletin 5344ELM21-23-095 and 6325ELM21-23-096.

Certification Basis:

Based on 14 CFR §§ 21.115 and 21.101, and the FAA policy for significant changes in FAA Order 8110.48, this STC is a non-significant change. The certification basis for un-changed or not affected areas by this STC remains un-changed by this STC and the certification basis for this STC is as follows:

a. FAA Alternate Means of Compliance 140S-14-89.
b. The following regulations for CFR Part 25 at later amendment than the TCDS all other regulations at certification basis defined in the TCDS:

Section	Title	At Amendment
§25.831	Ventilation	25-89
§25.853	Compartment Interiors	25-116
§25.869	Fire protection: systems	25-113
§25.981	Fuel tank ignition prevention	25-102
§25.1353	Electrical equipment and installations	25-113
§25.1423	Public address system	25-115
§25.1431	Electronic equipment	25-113
§25.1583	Operating limitations	25-105
§25.1585	Operating procedures	25-105

c. CFR Part 26:
   a. The design change does not impact existing Electrical Wiring Interconnect System Source Document.

Section	Title	At Amendment
§26.11	EWIS	26-0
§26.47	AASR	26-1

----------END----------

Revision Highlights

Revision 66 to D631W001.28E dated 02/11/2025

The purpose of this revision is to add limitations required by FAA Airworthiness Directive 2023-12-05 for 5G C-Band Wireless Broadband Interference.

The following changes comprise this revision:

Chapter - Front Matter

Revision Approval (Revised)

This section uniquely identifies the approval authority and the reference number for this revision.

Log of Sections (Revised)

Revised to reflect sections changed in this revision.

Chapter - Certificate Limitations

5G C-Band Wireless Broadband Interference (Added)

Revised to add 5G C-Band Wireless Broadband Interference limitations.

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Title **A242599**

777-200/-200LR/F

FAA APPROVED

AIRPLANE FLIGHT MANUAL

This document has Export Administration Regulations (EAR) data with Export Control Classification Numbers (ECCN) of 9E991.

EXPORT CONTROLLED - This technology or software is subject to the U.S. Export Administration Regulations (EAR), (15 C.F.R. Parts 730-774). No authorization from the U.S. Department of Commerce is required for export, re-export, in-country transfer, or access EXCEPT to country group E:1 or E:2 countries/ persons per Supp. 1 to Part 740 of the EAR. ECCN: 9E991

D631W001
BOEING COMMERCIAL AIRPLANE GROUP, SEATTLE, WASHINGTON, U.S.A.

Revision Approval A242736

This Revision Approval may only be used in conjunction with a Log of Sections that refers to Revision Approval Number A242736 in the revision approval number column for the Revision Approval section.

Approved by:

Flight Analyst E-UM, ODA-300064-NM, for

02/11/2025

Manager, Flight Test & Human Factors Branch, AIR-710
Federal Aviation Administration

Approved Date

Log of Sections A242736

D631W001.28E Revision 66 Date: 02/11/2025

	Chapter/Section	Revision Approval Number	Approval Date
	Front Matter		
	Title	A242599	02/16/2024
*	Revision Approval	A242736	02/11/2025
*	Log of Sections	A242736	02/11/2025
	ASN and Appendix Effectivity	A180282	04/24/2018
	Appendix Applicability	A170037	03/13/2017
	Preface	A150744	04/21/2015
	Certificate Limitations		
	Weight Limitations and Center of Gravity Limits	A180282 , A180282 , A180282 , A180282	04/24/2018 , 04/24/2018 , 04/24/2018 , 04/24/2018
	General - Certification Status	A121788	10/23/2013
	General - Flight Maneuvering Load Acceleration Limits	A121788	10/23/2013
	General - Kind of Airplane Operation	A121788	10/23/2013
	General - Required Crew	A121788	10/23/2013
	APU to Pack Operation	A144760	07/31/2014
	Cabin - Air Conditioning Packs	A180381	06/15/2018
	Cabin - Cabin Pressurization	A121788	10/23/2013
	Cabin - Passenger Evacuation	A121788	10/23/2013
	Cabin - Passenger Suites	A121788	10/23/2013
	Electronics - Air Data Inertial System (ADIRS)	A180101	03/08/2018
	Electronics - Autopilot Flight Director System	A144760	07/31/2014
	Electronics - Connexion by Boeing	A121788	10/23/2013
	Electronics - Electronic Flight Bag (EFB)	A121788	10/23/2013
	Electronics - FMCS - Barometric Altitude Temperature Compensation	A201630	03/25/2021
	Electronics - Ground Proximity Warning System - Look Ahead Terrain Alerting	A121788	10/23/2013
	Electronics - HF Radios	A121788	10/23/2013
	Electronics - QFE Selection	A121788	10/23/2013
	Engines	A121788	10/23/2013
	Engines - Anti-Ice System	A121788	10/23/2013
	Engines - EGT	A144760	07/31/2014
	Engines - Fuel System	A144760	07/31/2014
	Engines - Limit Display Markings	A121788	10/23/2013
	Engines - Oil System	A121788	10/23/2013
	Engines - Reverse Thrust	A121788	10/23/2013

* = Revised Sections @ = Airplane Serial Number Note Change Only

Log of Sections (Continued) A242736

	Chapter/Section	Revision Approval Number	Approval Date
	Engines - RPM	A144760	07/31/2014
	Engines - Thrust	A121788	10/23/2013
	Flap Operation	A121788	10/23/2013
	Flight Controls	A121788	10/23/2013
	Flight Deck Security Door	A121788	10/23/2013
	Fuel Quantity Indication System (FQIS)	A211749	06/22/2021
	Fuel System - Loading	A201420	04/21/2020
	Fuel System - Usage	A144760	07/31/2014
	Fuel System - Useable Tank Quantities	A121788	10/23/2013
	Maximum Airspeed Limits	A144760	07/31/2014
	Maximum Operating Limit Speed	A121788	10/23/2013
	Operational Limits	A121788 , A121788	10/23/2013 , 10/23/2013
	Performance Configuration	A121788	10/23/2013
	Performance Configuration - Brakes	A121788	10/23/2013
	Performance Configuration - Tires	A144760	07/31/2014
	Rests - Lower Crew Rest Compartment	A121788	10/23/2013
	Rests - Overhead Flight Attendant Rest (OFAR)	A121788	10/23/2013
	Rests - Overhead Flight Crew Rest (OFCR)	A121788	10/23/2013
*	5G C-Band Wireless Broadband Interference	A232459	06/04/2024
	Non-Normal Procedures		
	General	A121788	10/23/2013
	Aborted Engine Start	A121788	10/23/2013
	Alternate Flap Operation	A121788	10/23/2013
	Alternate Landing Gear Extension	A121788	10/23/2013
	Cabin Altitude (E)	A121788	10/23/2013
	Cabin Altitude Automatic	A121788	10/23/2013
	Ditching (E)	A144760	07/31/2014
	Door Fwd Cargo or Door Aft Cargo	A121788	10/23/2013
	Dual Engine Failure Stall (E)	A121788	10/23/2013
	Electrical AC Bus(es) Off	A121788	10/23/2013
	Engine Failure	A121788	10/23/2013
	Engine Fuel Filter	A121788	10/23/2013
	Engine Inflight Restart	A121788	10/23/2013
	Engine Oil Pressure	A121788	10/23/2013
	Engine Oil Temperature	A121788	10/23/2013
	Engine Severe Damage or Separation (E)	A121788	10/23/2013
	Evacuation (E)	A121788	10/23/2013

* = Revised Sections @ = Airplane Serial Number Note Change Only

Log of Sections (Continued) A242736

Chapter/Section	Revision Approval Number	Approval Date
Fire APU (E)	A121788	10/23/2013
Fire Cargo (E)	A121788	10/23/2013
Fire Engine (E)	A121788	10/23/2013
Fire Wheel Well (E)	A121788	10/23/2013
Flaps Drive	A121788	10/23/2013
Flight Control Mode	A121788	10/23/2013
Flight Controls	A121788	10/23/2013
Fuel Jettison System	A121788	10/23/2013
Fuel Leak	A121788	10/23/2013
Fuel Loading with Confirmed Failed Main Tank Unit	A147720	12/02/2014
Fuel Quantity Low	A121788	10/23/2013
Fuel Scavenge System	A144760	07/31/2014
Ground Proximity Warning System	A121788	10/23/2013
Hydraulic Pump Overheat	A121788	10/23/2013
Hydraulic System Low Pressure	A121788	10/23/2013
Main Gear Brace	A121788	10/23/2013
One Engine Inoperative Landing	A121788	10/23/2013
Overheat Engine	A121788	10/23/2013
Pitch Down Authority	A121788	10/23/2013
Pitch Up Authority	A121788	10/23/2013
Primary Flight Computers	A121788	10/23/2013
Smoke Fire or Fumes (E)	A121788	10/23/2013
Smoke or Fumes Removal (E)	A121788	10/23/2013
Stabilizer Greenband	A121788	10/23/2013
Stabilizer Uncommanded or Inoperative	A121788	10/23/2013
Wing Anti-Ice Valve Failed Open	A211711	06/25/2021
Normal Procedures		
General	A121788	10/23/2013
Air Conditioning Packs	A190939	05/21/2019
Air Data Inertial Reference System (ADIRS)	A180361	05/29/2018
Air Traffic Control Radar Beacon System	A146604	05/12/2015
Autopilot Flight Director System	A150438	06/08/2015
Extended Range Operations	A121788	10/23/2013
Flight Controls	A121788	10/23/2013
Flight Deck Communications System (Datalink)	A201630	03/25/2021
Flight Management Computer System (FMCS)	A152148	10/19/2015
Fuel Quantity Indication System (FQIS) Refueling Station Door Cycling Procedure	A211749	06/22/2021

* = Revised Sections @ = Airplane Serial Number Note Change Only

Log of Sections (Continued) A242736

Chapter/Section	Revision Approval Number	Approval Date
Reduced Vertical Separation Minimum (RVSM)	A121788	10/23/2013
Reverse Thrust	A121788	10/23/2013
Severe Turbulent Air Penetration	A121788	10/23/2013
Traffic Alert and Collision Avoidance System (TCAS)	A211696	06/15/2021
Weather Radar with Turbulence Display	A148140	02/23/2015
Performance		
Regulatory Compliance	A121788	10/23/2013
Definitions - Airspeeds	A121788	10/23/2013
Definitions - Icing Conditions	A121788	10/23/2013
Definitions - Takeoff Flight Path	A121788	10/23/2013
Definitions - Takeoff Path	A121788	10/23/2013
Definitions - Temperature	A121788	10/23/2013
Definitions - Wind Velocity	A121788	10/23/2013
Standard Performance Conditions	A121788	10/23/2013
Performance Configuration	A147700	01/28/2015
Airplane Flight Manual Digital Performance Information (AFM-DPI)	A121788	10/23/2013
AFM-DPI - Performance Software Serial Number (PSSN)	A144760	07/31/2014
AFM-DPI - Airplane Serial Number Applicability	A144760	07/31/2014
AFM-DPI - Authorized Performance Capability	A180282	04/24/2018
AFM-DPI - Notes	A144760	07/31/2014
AFM-DPI - Release Notes	A121788	10/23/2013
Automatic Wheel Brakes	A121788	10/23/2013
Buffet Onset Characteristics	A121788	10/23/2013
Engine - AFM-DPI Selection of Anti-Ice	A121788	10/23/2013
Engine - Go-Around Power Setting	A121788	10/23/2013
Engine - Inflight Power Setting	A121788	10/23/2013
Engine - Takeoff Power Setting	A121788	10/23/2013
Environmental Envelope	A144760	07/31/2014
Flap Retraction Speed Schedule	A121788	10/23/2013
Inflight Restart Envelope	A144760	07/31/2014
Maximum Crosswind	A121788	10/23/2013
Maximum Quick Turnaround Weight	A121788	10/23/2013
Noise Characteristics	A180423 , A180423	10/15/2018 , 10/15/2018
Normal Cruise Altitude Limits Due to Buffet	A144760	07/31/2014
Performance Conditions and Procedures	A121788	10/23/2013
Performance Conditions and Procedures - Takeoff	A121788	10/23/2013
Performance Conditions and Procedures - Rejected Takeoff	A121788	10/23/2013

* = Revised Sections @ = Airplane Serial Number Note Change Only

Log of Sections (Continued) A242736

Chapter/Section	Revision Approval Number	Approval Date
Performance Conditions and Procedures - Climb-Out	A121788	10/23/2013
Performance Conditions and Procedures - Obstacle Clearance	A121788	10/23/2013
Performance Conditions and Procedures - Landing Field Length	A121788	10/23/2013
Position Corrections	A144760	07/31/2014
Recommended Takeoff Stabilizer Setting	A144760	07/31/2014

* = Revised Sections @ = Airplane Serial Number Note Change Only

Airplane Serial Number & Appendix Effectivity A180282

The Airplane Flight Manual (AFM) is applicable to the following Airplane Serial Numbers (ASNs):

29174, 29175, 30859-30862, 35525, 40198, 40199

The Appendices contained in this AFM are applicable to the following ASNs:

Appendix	ASNs	Notes
D631W001-3A	All	
D631W001-721	All	1
D631W001-724	All	1
D631W001-777CDL	All	

Note(s):

1. Applicable depending upon incorporation of Boeing Service Bulletin 777-11-0073.

Appendix Applicability A170037

The following appendices are applicable to this AFM. The appendices in the first column may only be used in conjunction with the appendices in the Applicable Appendices column:

Appendix	Title	Applicable Appendices
D631W001-3A	Landing Gear Extended, 777-200/-200LR/F	All
D631W001-721	Operation at Alternate Maximum Takeoff Weight of 511,400 Pounds (231,967 Kilograms), 777-200	3A, 777CDL
D631W001-724	Operation at Alternate Maximum Takeoff Weight of 573,000 Pounds (259,908 Kilograms), 777-200	3A, 777CDL
D631W001-777CDL	Configuration Deviation List, 777 Series	All

Preface A150744

The engineering developed and the FAA certification provided by Airplane Flight Manual (AFM) revisions are applicable and valid only for the airplane in its original Boeing delivery configuration as modified by the incorporation of approved Boeing service bulletins. With respect to any other modifications, it shall be the responsibility of the operator to obtain appropriate regulatory agency approval for application of the data provided by this AFM revision.

Weight Limitations and Center of Gravity Limits A180282

Applicable to ASN(s) : 29175, 30860, 30861

	Pounds	Kilograms
Maximum Taxi Weight (MTW)	634,500	287,804
Maximum Takeoff Weight (MTOW)	632,500	286,897
Maximum Landing Weight (MLW)	460,000	208,652
Maximum Zero Fuel Weight (MZFW)	430,000	195,044
Minimum Flight Weight (MFW)	266,100	120,701

Note:
The maximum weight limits may be less as limited by center of gravity, fuel density and fuel loading limits, as given in this chapter. Refer to the Weight and Balance Manual for additional specific airplane loading limitations.

The Minimum Flight Weight is 266,100 pounds (120,701 kilograms). Minimum Flight Weight must not include gaugeable fuel.

The Minimum Flight Weight limit may be higher as limited by center of gravity charts, this section, or performance data (Performance Chapter). Refer to the applicable Weight and Balance Manual for additional specific airplane loading limitations.

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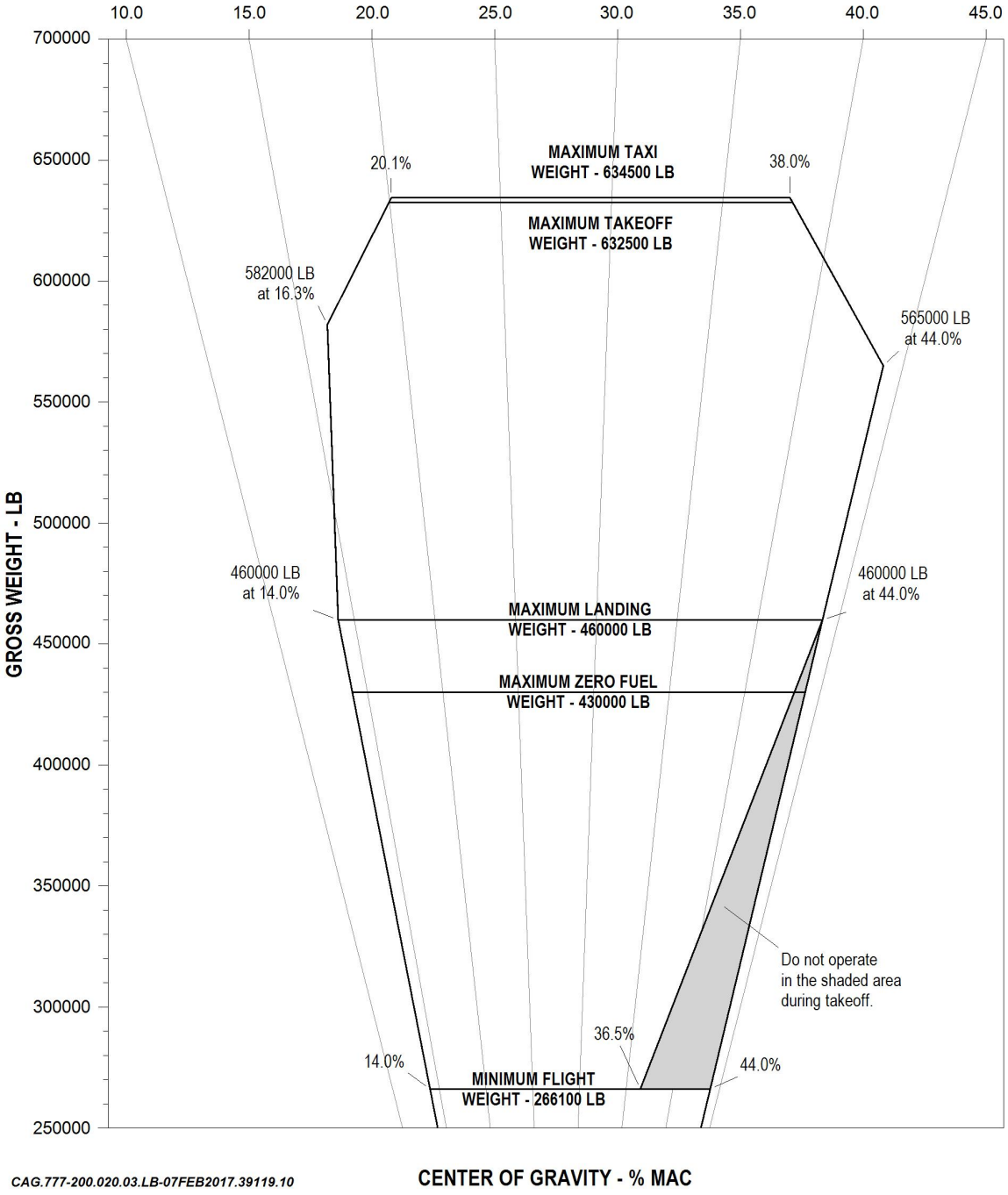
Section Weight Limitations and Center of Gravity Limits, continued from previous page A180282

Refer to the applicable Weight and Balance Manual for identification of
C.G. coordinates and specific loading/operating restrictions



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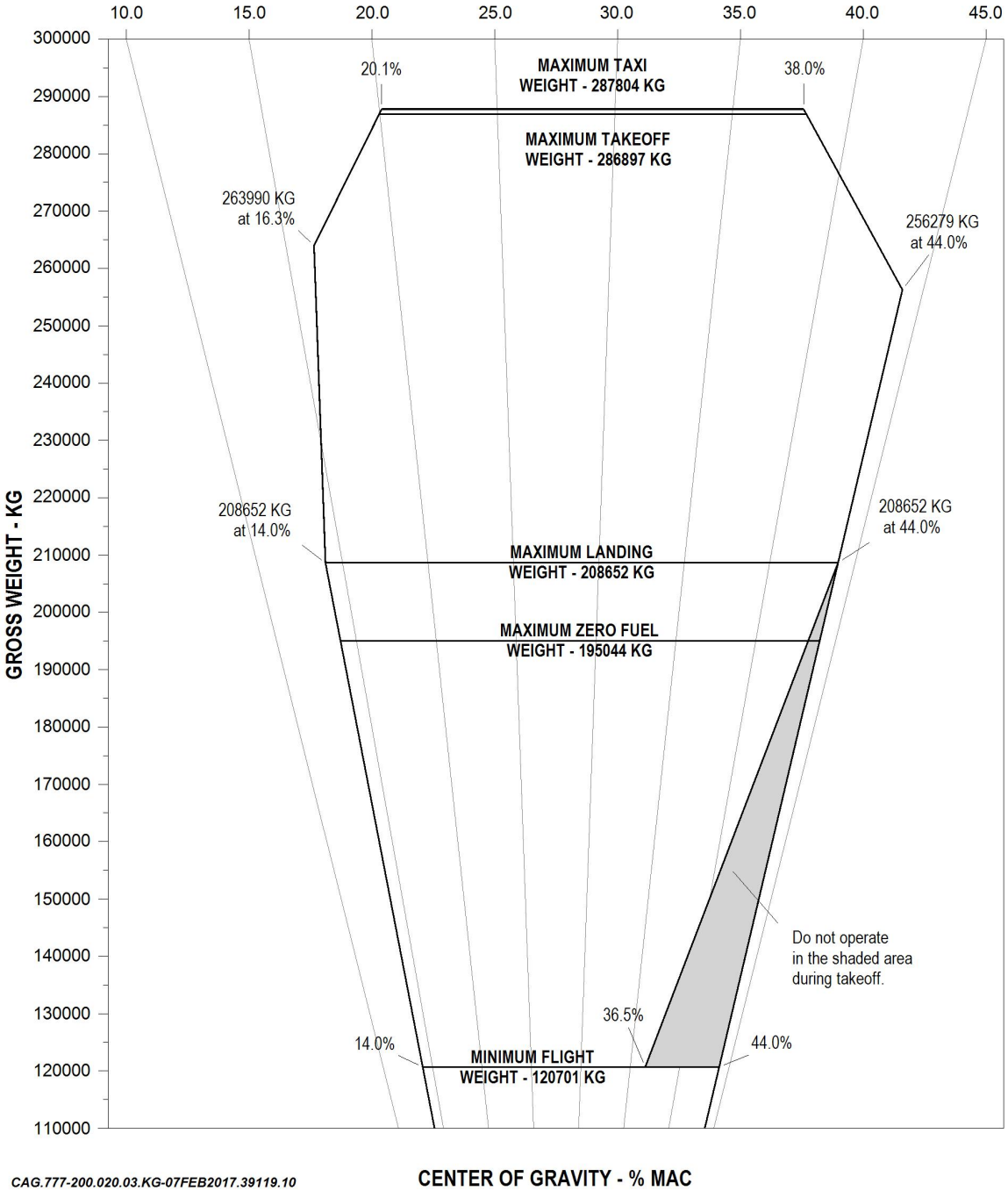
Refer to the applicable Weight and Balance Manual for identification of
C.G. coordinates and specific loading/operating restrictions



Weight Limitations and Center of Gravity Limits A180282

Applicable to ASN(s) : 29174

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Section Weight Limitations and Center of Gravity Limits, continued from previous page A180282

	Pounds	Kilograms
Maximum Taxi Weight (MTW)	650,000	294,835
Maximum Takeoff Weight (MTOW)	648,000	293,927
Maximum Landing Weight (MLW)	460,000	208,652
Maximum Zero Fuel Weight (MZFW)	430,000	195,044
Minimum Flight Weight (MFW)	266,100	120,701

Note:
The maximum weight limits may be less as limited by center of gravity, fuel density and fuel loading limits, as given in this chapter. Refer to the Weight and Balance Manual for additional specific airplane loading limitations.

The Minimum Flight Weight is 266,100 pounds (120,701 kilograms). Minimum Flight Weight must not include gaugeable fuel.

The Minimum Flight Weight limit may be higher as limited by center of gravity charts, this section, or performance data (Performance Chapter). Refer to the applicable Weight and Balance Manual for additional specific airplane loading limitations.

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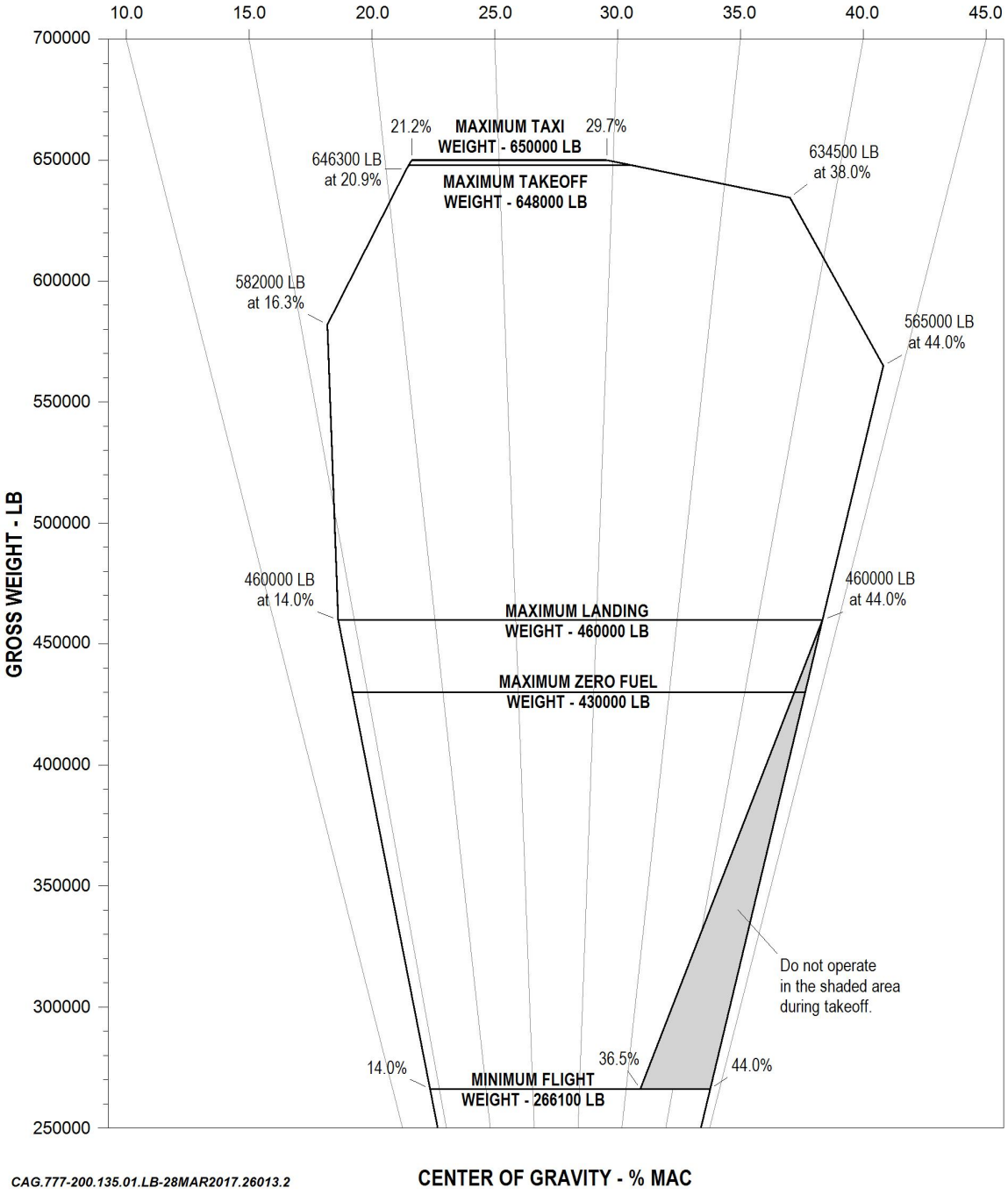
Refer to the applicable Weight and Balance Manual for identification of
C.G. coordinates and specific loading/operating restrictions



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Refer to the applicable Weight and Balance Manual for identification of
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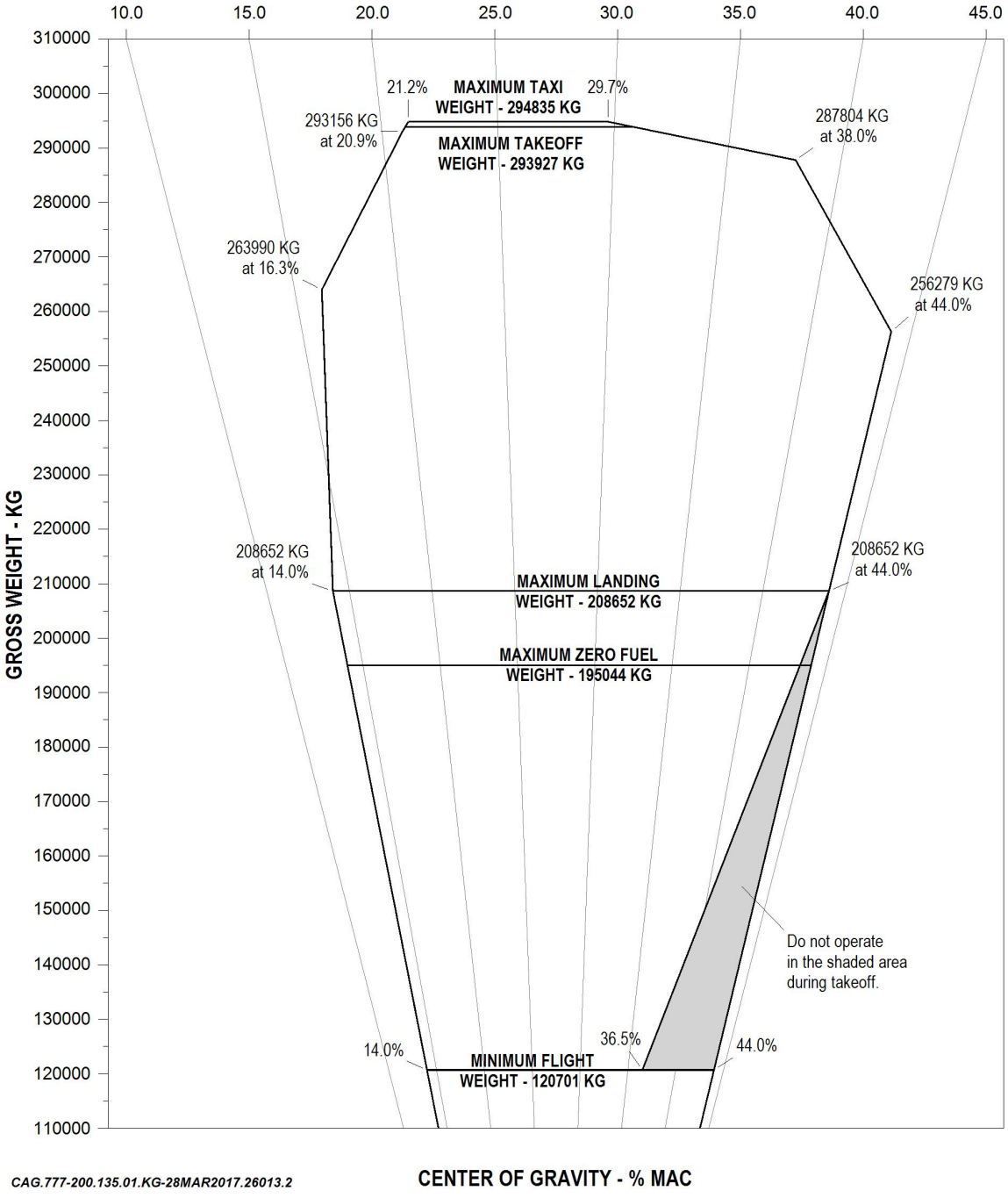

Weight Limitations and Center of Gravity Limits A180282

Applicable to ASN(s) : 30859

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Section Weight Limitations and Center of Gravity Limits, continued from previous page A180282

	Pounds	Kilograms
Maximum Taxi Weight (MTW)	650,000	294,835
Maximum Takeoff Weight (MTOW)	648,000	293,927
Maximum Landing Weight (MLW)	460,000	208,652
Maximum Zero Fuel Weight (MZFW)	430,000	195,044
Minimum Flight Weight (MFW)	266,100	120,701

Note:
The maximum weight limits may be less as limited by center of gravity, fuel density and fuel loading limits, as given in this chapter. Refer to the Weight and Balance Manual for additional specific airplane loading limitations.

The Minimum Flight Weight is 266,100 pounds (120,701 kilograms). Minimum Flight Weight must not include gaugeable fuel.

The Minimum Flight Weight limit may be higher as limited by center of gravity charts, this section, or performance data (Performance Chapter). Refer to the applicable Weight and Balance Manual for additional specific airplane loading limitations.

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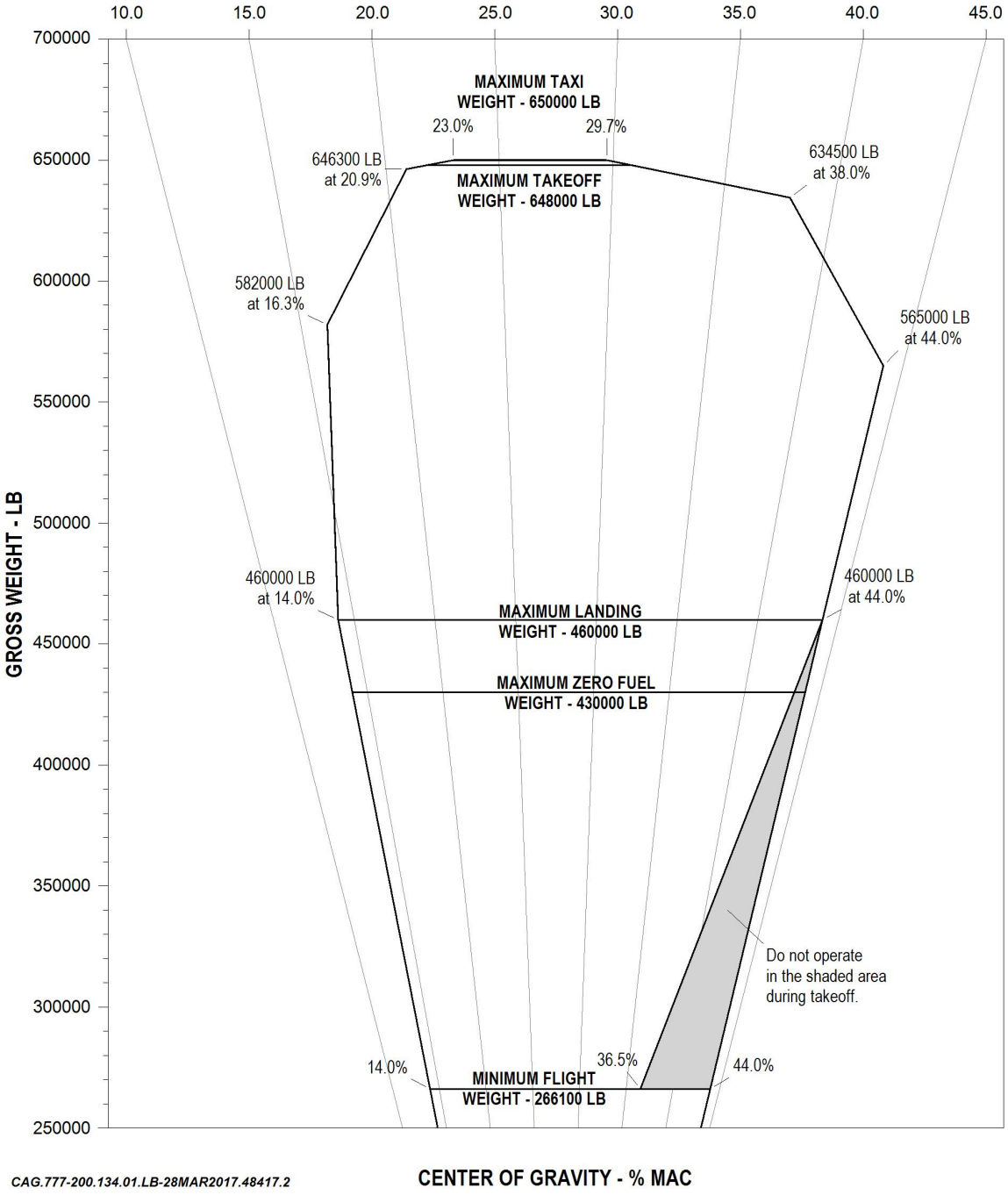
Refer to the applicable Weight and Balance Manual for identification of
C.G. coordinates and specific loading/operating restrictions



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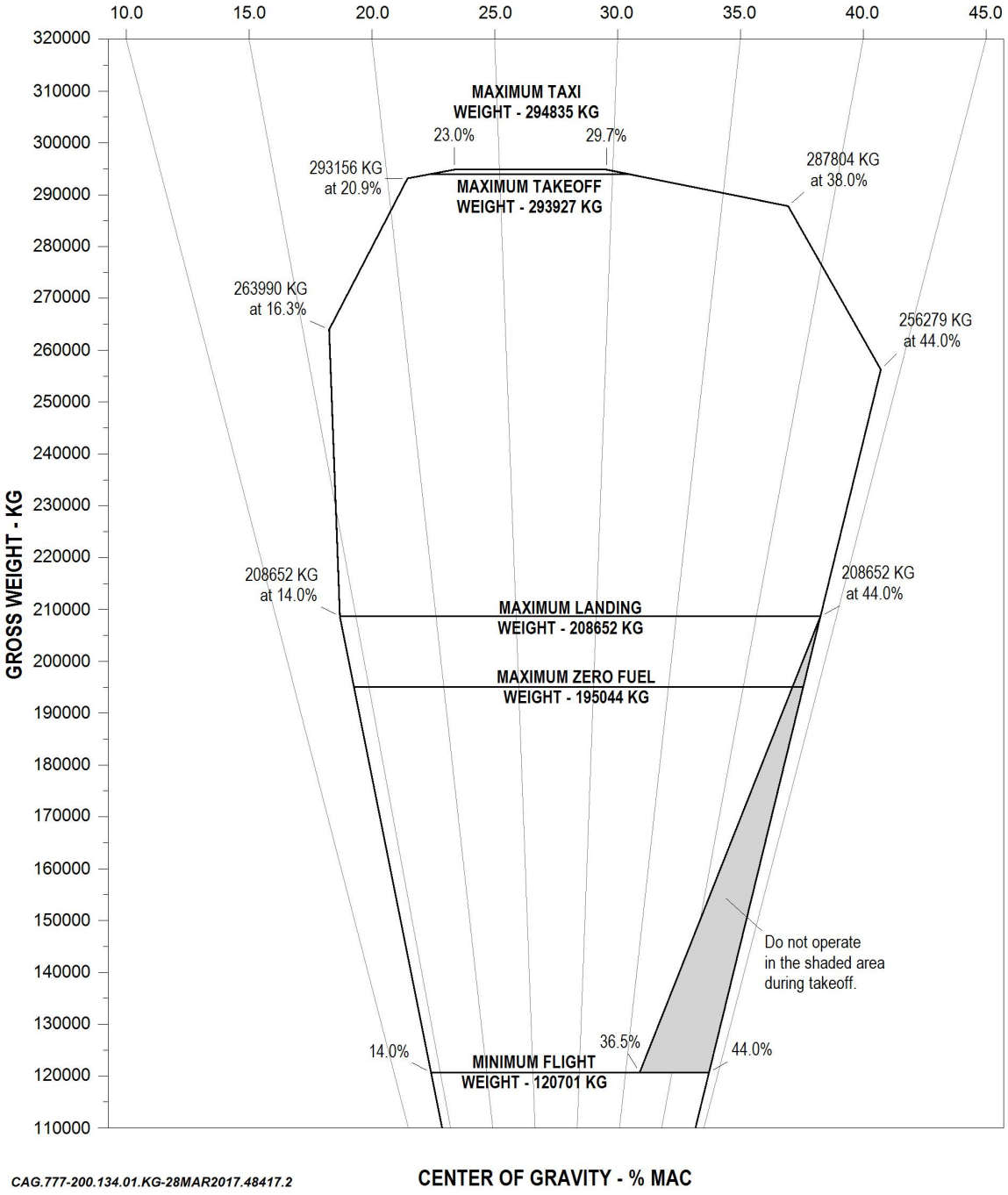
Refer to the applicable Weight and Balance Manual for identification of
C.G. coordinates and specific loading/operating restrictions



Weight Limitations and Center of Gravity Limits A180282

Applicable to ASN(s) : 30862, 35525, 40198, 40199

Continued on next page

Section Weight Limitations and Center of Gravity Limits, continued from previous page A180282

	Pounds	Kilograms
Maximum Taxi Weight (MTW)	658,000	298,463
Maximum Takeoff Weight (MTOW)	656,000	297,556
Maximum Landing Weight (MLW)	460,000	208,652
Maximum Zero Fuel Weight (MZFW)	430,000	195,044
Minimum Flight Weight (MFW)	266,100	120,701

Note:
The maximum weight limits may be less as limited by center of gravity, fuel density and fuel loading limits, as given in this chapter. Refer to the Weight and Balance Manual for additional specific airplane loading limitations.

The Minimum Flight Weight is 266,100 pounds (120,701 kilograms). Minimum Flight Weight must not include gaugeable fuel.

The Minimum Flight Weight limit may be higher as limited by center of gravity charts, this section, or performance data (Performance Chapter). Refer to the applicable Weight and Balance Manual for additional specific airplane loading limitations.

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Refer to the applicable Weight and Balance Manual for identification of
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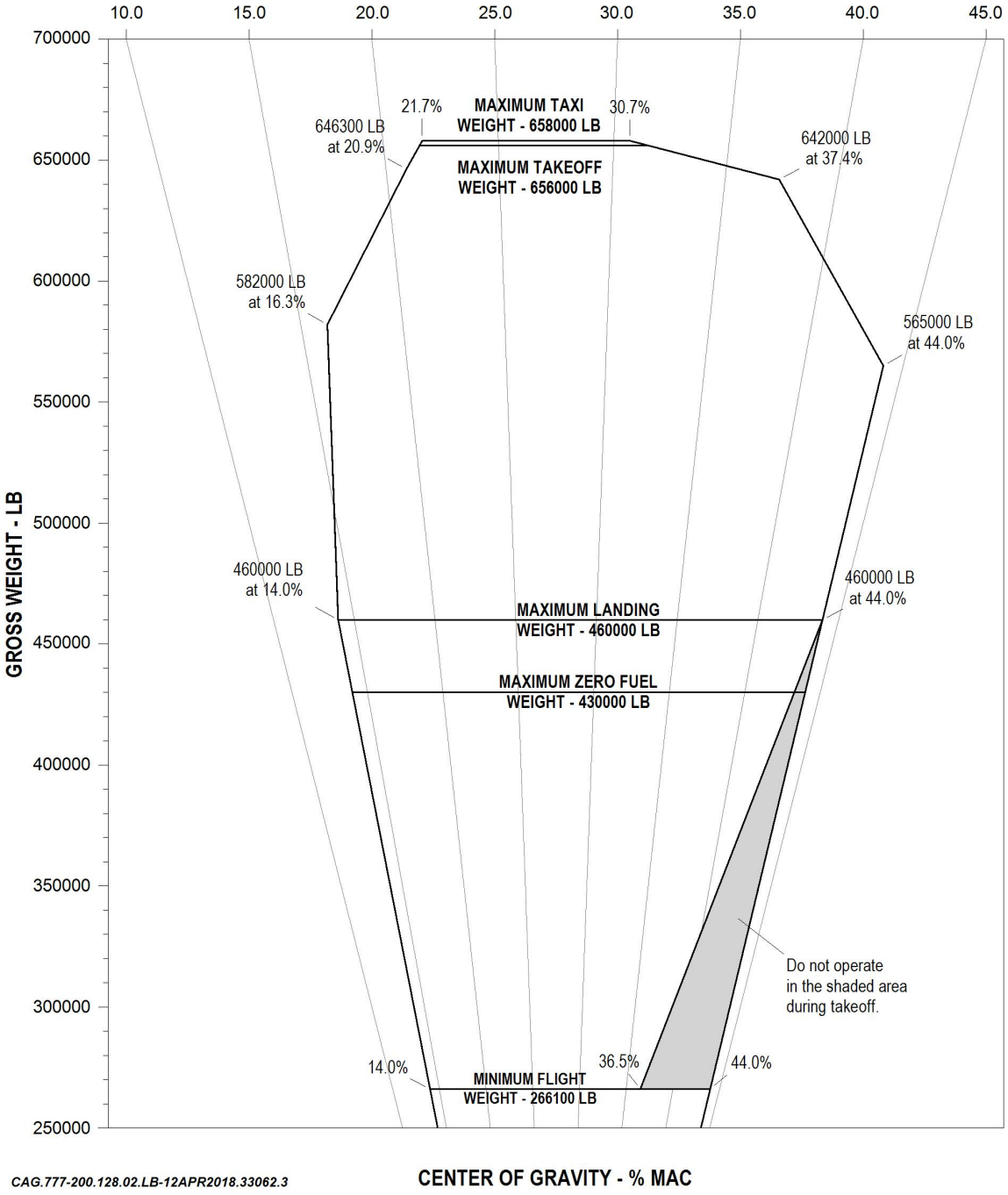

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Section Weight Limitations and Center of Gravity Limits, continued from previous page A180282

Refer to the applicable Weight and Balance Manual for identification of
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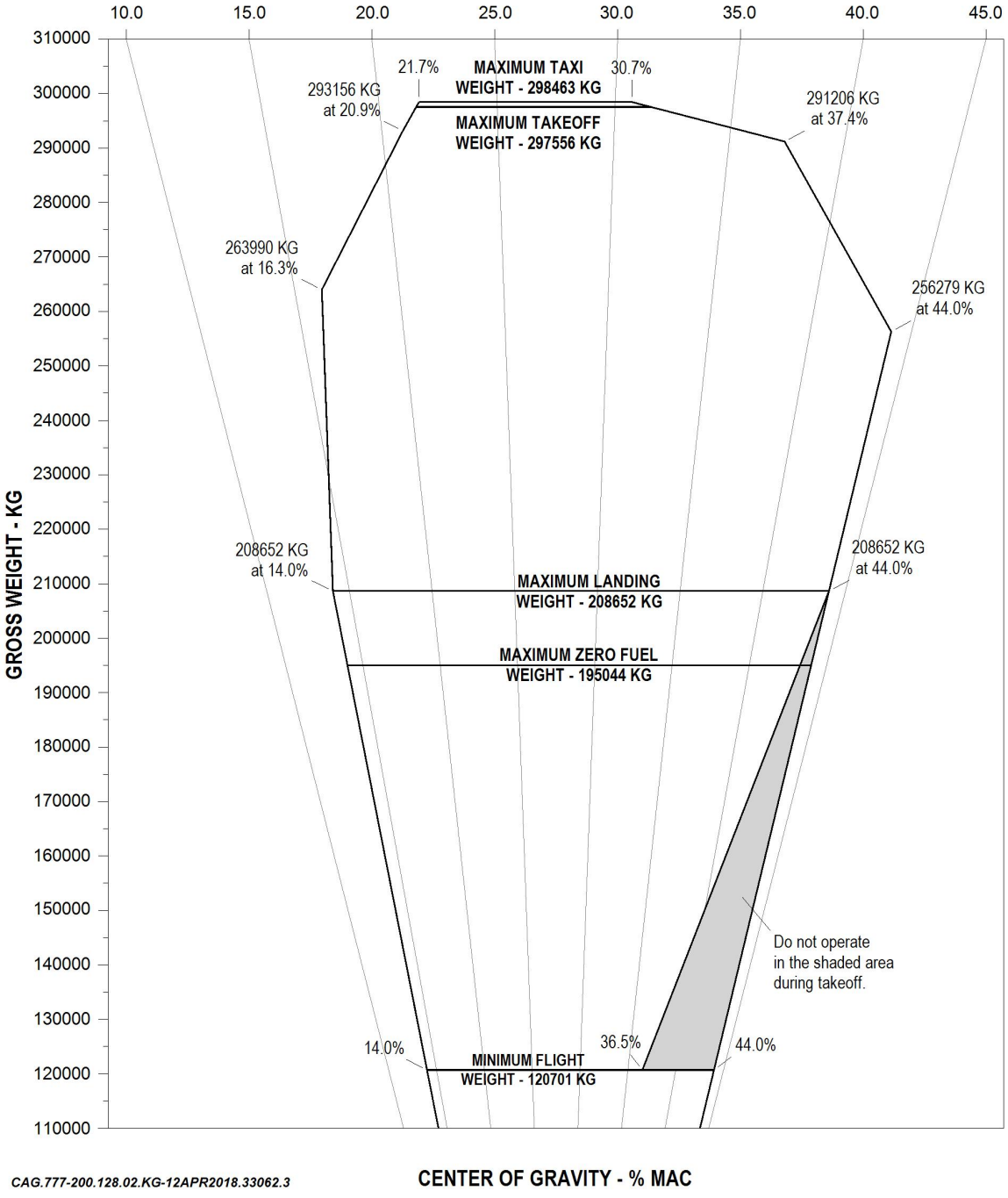


General - Certification Status A121788

This airplane is certificated in the Transport Category, FAR Part 25 and FAR Part 36.

General - Flight Maneuvering Load Acceleration Limits A121788

Flaps Up . . . . . +2.5g to -1.0g
Flaps Down . . . . . +2.0g to 0.0g

Note: With flaps 25 and 30, positive limits vary linearly from +2.0g at maximum landing weight to +1.5g at maximum takeoff weight.

General - Kind of Airplane Operation A121788

The airplane is approved for the following kinds of flight and operation, both day and night, provided the required equipment is installed and approved in accordance with the applicable Federal Aviation Regulations:

Visual (VFR)
Instrument (IFR)
Icing Conditions
Extended Over-Water

General - Required Crew A121788

Required flight crew: Pilot and Copilot

APU to Pack Operation A144760

APU to pack takeoffs are prohibited at airport pressure altitudes above 6900 feet.

Cabin - Air Conditioning Packs A180381

Dispatch with both packs inoperative is prohibited.

Cabin - Cabin Pressurization A121788

Maximum, positive relief valves . . . . . 9.1 psi differential

Maximum allowable cabin pressure differential for takeoff and landing is 0.11 psi.

Cabin - Passenger Evacuation A121788

Main door emergency power assist systems and emergency evacuation slide systems must be armed with the mode select handles in the ARMED or AUTOMATIC position, prior to taxi, takeoff and landing whenever passengers are carried. Girt bar indication flags are visible through windows in the doorway liners when the doors and slides are in the ARMED or AUTOMATIC mode.

Cabin phones and or handsets (if installed) must be stowed, and the cabin prepared to satisfy direct view requirements by lowering the passenger seat headrests and opening the partition viewing window, prior to taxi, takeoff and landing whenever passengers are carried.

Cabin - Passenger Suites A121788

(If installed)

The use of passenger suites are prohibited unless an additional attendant, above the minimum required by the applicable operating rules, is present and whose primary duty is to ensure that the passenger suite doors are properly latched in the open position for taxi, takeoff and landing.

Electronics - Air Data Inertial System (ADIRS) A180101

ADIRU alignment must not be attempted at latitudes greater than 78 degrees, 14.75 minutes.

All flight operations based on magnetic heading or magnetic track angle are prohibited in geographic areas where the loaded ADIRU MagVar table errors are greater than 5 degrees.*

All autopilot/flight director ILS approach and landing operations that use magnetic north referenced courses or bearings are prohibited in geographic areas where the loaded ADIRU MagVar table errors are greater than 3 degrees.*

* See the **Air Data Inertial Reference System (ADIRS)** section of the **Normal Procedures** chapter for procedures to determine the geographic areas and magnitude of MagVar errors for the specific MagVar table loaded in the ADIRU and if any of these limitations apply.

Electronics - Autopilot Flight Director System A144760

The autopilot must not be engaged below a minimum engage altitude of 200 feet AGL after takeoff.

Without LAND 2 or LAND 3 annunciated, the autopilot must be disengaged below 200 feet AGL.

Prior to incorporation of Boeing Service Bulletin 777-27-0017, or production equivalent, use of aileron trim with the autopilot engaged is prohibited.

Automatic Landing

Maximum allowable wind speeds when landing weather minima are predicated on autoland operations:

Headwind: 25 knots
Tailwind: 15 knots*
Crosswind: 25 knots

* Operations in tailwinds greater than 10 knots may be further restricted. See the Operational Limits of this section.

The maximum and minimum glideslope angles are 3.25 degrees and 2.5 degrees respectively.

The autoland capability may be used with flaps 20 or 30, with both engines operative or with one engine inoperative. The Autopilot Flight Director System (AFDS) status annunciation must have LAND2 or LAND3 displayed and the SLATS DRIVE EICAS message must not be present.

Automatic Approach with Flaps 25

Category III operations and autoland are not approved with flaps 25. Category II automatic approach with manual landing (both engines operative and single engine inoperative) has been approved for dual or triple channel (LAND 2 or LAND 3 annunciated) and for an autopilot minimum use height of 100 feet AGL.

Electronics - Connexion by Boeing A121788

(If installed)

This limitation is not applicable upon incorporation of Boeing Service Bulletin 777-24-0101.

This system is intended to provide cached and internet content and email services to the airplane's cabin passengers only with access via Personal Electronic Devices (PEDs) equipped with IEEE 802.11(a), (b), (g) wireless LAN and/or wired Ethernet LAN capability. Other use of this system will require a re-examination of the certification basis.

The use of PEDs or other transmitting devices within the flight deck to access this system is not certified and is not allowed.

Electronics - Electronic Flight Bag (EFB) A121788

(If Installed)

Do not use the Airport Map display as a primary navigation reference (as applicable).

The EFB portable keyboard and attaching cable, if installed, must be stowed during takeoff and landing.

Electronics - FMCS - Barometric Altitude Temperature Compensation A201630

When the destination's reported temperature is below the minimum published temperature for the approach, instrument approach operations are prohibited unless manual temperature compensated barometric altitude corrections are applied in accordance with operationally approved procedures.

If no minimum temperature is published for the approach, manual temperature compensated barometric altitude corrections must be applied in accordance with applicable operationally approved procedures, as specified by the operator's regulatory authority or by the authority of the country in which the operation is conducted (including Air Traffic Control).

Warning: Use of published procedures without consideration of cold temperature effects on barometric altitudes does not assure obstacle clearance. The Flight Management System does not provide an automatic approach barometric altitude temperature compensation function.

Electronics - Ground Proximity Warning System - Look Ahead Terrain Alerting A121788

Do not use the terrain display for navigation.

The use of look-ahead terrain alerting and terrain display functions are prohibited within 15 nm of takeoff, approach or landing at an airport or runway not contained in the GPWS terrain database. Refer to Honeywell Document 060-4267-000 for airports and runways contained in the installed GPWS terrain database.

Electronics - HF Radios A121788

The following limitation is applicable to all airplanes with the listed HF communications equipment installed.

Flights predicated on the use of the following HF frequencies are prohibited:

HF Communications Equipment Installed	Frequencies (Mhz)
Rockwell/Collins model HFS-700 and/or HFS-900 HF communication transceivers	11.133, 22.434, 22.683, 22.766
Rockwell/Collins HF coupler part numbers 822-0987-001, -002, -003 and/or -004	29.489, 29.490
Honeywell HF coupler part number 964-0453-011*	3.700 - 3.800, 5.300 - 5.400, 9.500 - 9.600

* Not applicable upon incorporation of Honeywell Service Bulletin 964-0453-23-18, or production equivalent.

The following limitation is applicable only to airplanes equipped with a dual Rockwell/Collins HF system with Rockwell/Collins digital coupler part number 822-0987-002:

If one HF radio is selected for transmission, deselect the other HF radio on all audio select panels to prevent audio interference.

Electronics - QFE Selection A121788

A QFE altitude reference for the Primary Flight Displays (PFD's) must be selected in the Flight Management System (FMS) whenever QFE is used instead of QNH. The use of VNAV and/or LNAV with QFE selected is prohibited.

Engines A121788

Pratt & Whitney PW4000 Series

Engines - Anti-Ice System A121788

Engine anti-ice must be ON during all ground operations, and either ON or in AUTO during flight, when icing conditions exist or are anticipated, except when the temperature is below -40°C OAT. The primary ice detection system (if operative) will automatically turn the engine anti-ice system on and off as required in response to ice detection signals (flight mode only). Do not use anti-ice if OAT or TAT exceeds 10°C (50°F).

Note: If the primary ice detection system is inoperative, do not rely on airframe visual icing cues to turn engine anti-ice on. Use the temperature and visual moisture criteria specified in this section. Delaying the use of engine anti-ice until ice buildup is visible from the cockpit may result in severe engine damage and/or flameout.

Icing conditions exist when indicated in flight by the primary ice detection system, or when the OAT on the ground and for takeoff, or TAT inflight, is 10°C (50°F) or below and visible moisture in any form is present (such as clouds, fog with visibility of one mile or less, rain, snow, sleet and ice crystals).

Icing conditions also exist when the OAT on the ground and for takeoff is 10°C (50°F) or below when operating on ramps, taxiways or runways where surface snow, ice, standing water or slush may be ingested by the engines or freeze on engines, nacelles or engine sensor probes.

Engines - EGT A144760

Operation Condition	Temperature Limits		Time Limit
	PW4074/77	PW4074D/77D/84D/ 90/90-3	
Takeoff	625°C	675°C	5 Minutes
Maximum Continuous	605°C	650°C	No Limit
Starting (ground)	535°C	535°C	No Limit
Starting (inflight)	625°C	675°C	No Limit

Engines - Fuel System A144760

The following fuels and mixtures thereof are approved for use:

Jet A and Jet A-1 as specified in ASTM-D1655
JP-5 as specified in MIL-DTL-5624
JP-8 as specified in MIL-DTL-83133

The use of JP-4 and Jet B fuels is prohibited.

Fuels produced to other specifications and having properties meeting the requirements of the above specifications are acceptable for use. Fuels meeting the IATA Guidance Material defining desirable fuel properties are also acceptable.

Tank fuel temperature prior to takeoff must not be less than -40°C or 3°C above the fuel freezing point, whichever is higher. Inflight tank fuel temperature must be maintained at least 3°C above the freezing point of the fuel being used. The use of Fuel System Inhibitor additives does not change the minimum fuel tank temperature limit.

The maximum tank fuel temperature is 49°C (120°F).

Engines - Limit Display Markings A121788

Maximum and minimum limits . . . . . Red
Cautionary limits . . . . . Amber

The engine limit display markings on EICAS must be used to determine compliance with the maximum and minimum limits and precautionary ranges. If EICAS markings show more conservative limits than those specified below, the limit markings shown on EICAS must be observed.

Engines - Oil System A121788

Maximum oil temperature, continuous operation, is 163°C. Maximum oil temperature, 20 minute limit, is 177°C. Minimum oil pressure is 70 psi. Temporary operation below 70 psi during negative G operation is limited to 30 seconds maximum. Oil temperature must be greater than 50°C before advancing throttles to takeoff power.

Engines - Reverse Thrust A121788

Use for ground operation only. Intentional selection of reverse thrust in flight is prohibited. Backing the airplane with the use of reverse thrust is prohibited.

Position thrust reverse levers full down (forward thrust) only after engines have decelerated to reverse idle.

Engines - RPM A144760

Maximum Operational Limits		
N1	Low Pressure Compressor Rotor	103.1% (PW4074/74D/77/77D) 105.0% (PW4084D/90/90-3)
N2	High Pressure Compressor Rotor	100.5%

Engines - Thrust A121788

Power setting values for maximum continuous thrust, go-around thrust and full rated takeoff thrust are provided by AFM-DPI for both primary and alternate EEC modes. These power setting values are operational limits. Takeoff and go-around thrust rating are limited to 5 minutes duration.

Derated takeoff thrust: Power setting values for derated takeoff thrust are available from AFM-DPI for primary EEC mode. These power setting values are operational limits. Use of derated takeoff thrust is not allowed for alternate EEC mode operation. As a condition to the use of derated thrust, operators must perform periodic checks to ensure that the engines are capable of producing full takeoff thrust without exceeding any engine operating limits.

Reduced takeoff thrust: Operation at reduced takeoff thrust based on an assumed temperature higher than the actual ambient temperature is permissible if the airplane meets all applicable performance requirements at the planned takeoff weight and reduced thrust setting. The thrust reduction is referenced to the takeoff thrust, which in turn can be either full rated takeoff thrust or derated takeoff thrust. The amount of thrust reduction must not exceed 25 percent of the takeoff thrust. The power setting values for reduced takeoff thrust are available from AFM-DPI. At any time during the takeoff operation, the pilot may select takeoff thrust instead of reduced takeoff thrust. Use of reduced thrust procedures is allowed on a wet runway if suitable performance accountability is made for the increased stopping distance on the wet surface. Reduced thrust is not allowed when the runway is contaminated with standing water, ice, slush, or snow. Reduced thrust is not allowed for alternate EEC mode operation. When allowed, use of reduced thrust is at the pilot's discretion. As a condition to the use of reduced thrust procedures, operators must perform periodic checks to ensure that the engines are capable of producing full takeoff thrust without exceeding any engine operating limits.

Flap Operation A121788

Do not extend flaps above 20,000 feet.

Flight Controls A121788

Takeoff is permitted only in the normal flight control mode.

Avoid rapid and large alternating control inputs, especially in combination with large changes in pitch, roll, or yaw (e.g. large side slip angles) as they may result in structural failure at any speed, including below V_A .

Flight Deck Security Door A121788

(If installed)

Verify that an operational check of the Flight Deck Access System has been accomplished according to approved procedures once each flight day.

Continued on next page

Section Flight Deck Security Door, continued from previous page

Fuel Quantity Indication System (FQIS) A211749

The following limitation is not applicable upon incorporation of Boeing Service Bulletin 777-28A0090, or production equivalent.

(Required by AD 2020-11-11)

Operating limitation requiring flight crew verification that the aircraft refueling station door was cycled.

When fuel is added to or removed from the center fuel tank, the Flight Crew must acknowledge they have received notification that the aircraft refueling station door has been cycled in accordance with the Normal Procedures Section procedure titled: Fuel Quantity Indication System (FQIS) Refueling Station Door Cycling Procedure.

Fuel System - Loading A201420

Fuel density must be between 6.1 and 7.1 lb/gallon (0.7309 and 0.8507 kg/liter).

When operating with a zero fuel weight greater than 430,000 pounds (195,044 kilograms) the fuel density must be between 6.3 and 7.1 lb/gallon (0.755 and 0.850 kg/liter).

Fuel tanks may be loaded individually, simultaneously, or in any sequence. Load main tanks equally to the desired fuel quantity or until full. Main tanks must be scheduled to be full if center tank fuel is loaded; except that up to 3000 pounds (1360 kilograms) of fuel may be loaded in the center tank with less than full main tanks provided the weight of the fuel in the center tank plus the actual zero fuel weight does not exceed the Maximum Zero Fuel Weight, and the Center of Gravity limits are observed. Fuel must always be used in accordance with the **Fuel System - Usage** limitations specified in this chapter.

When center tank fuel is required for the mission, an additional 700 lb (320 kg) of reserve fuel must be added to the center tank fuel load.[1][2][3]

[1] This requirement is not applicable when AD 2016-11-03 has been complied with, or to line numbers 1099 and on.

[2] This requirement must be implemented within 60 months of the effective date of AD 2016-11-03.

[3] An Alternate Method of Compliance (AMOC) to AD 2016-11-03 must be obtained.

Fuel imbalance between main tanks for taxi, takeoff and landing must not exceed:

3000 lb (1360 kg) when total main tank fuel exceeds 114,000 lb (51,709 kg).

4000 lb (1814 kg) when total main tank fuel is less than or equal to 50,000 lb (22,680 kg).

A linear interpolation between 4000 lb (1814 kg) and 3000 lb (1360 kg) when main tank fuel is greater than 50,000 lb (22,680 kg) and less than or equal to 114,000 lb (51,709 kg), respectively.

Fuel System - Usage A144760

With no center tank fuel, use main tank-to-engine fuel feed with all operable main tank boost pumps on and the crossfeed valves closed.*

The following is applicable prior to incorporation of Boeing Service Bulletin 777-28A0040 or 777-28A0039.

With center tank fuel, use center tank fuel for all operations with all operable boost pumps on and the crossfeed valves closed* until the FUEL LOW CENTER advisory message is displayed. Then continue flight using main tank-to-engine fuel feed with all operable main tank boost pumps on and the crossfeed valves closed.*

> * A crossfeed valve is opened for minimum fuel operation. To correct fuel imbalance, open a crossfeed valve and turn the low tank boost pumps off.

The following is applicable after incorporation of Boeing Service Bulletin 777-28A0040 or 777-28A0039, or production equivalent.

With center tank fuel quantity greater than 10,500 lbs (4,762 kgs), use center tank fuel for all operations with all operable boost pumps on and the crossfeed valves closed* until the FUEL LOW CENTER advisory message is displayed. Then continue flight using main tank-to-engine fuel feed with all operable main tank boost pumps on and the crossfeed valves closed.* If the FUEL IN CENTER advisory message displays in stabilized cruise, use center tank fuel with all operable boost pumps on and the crossfeed valves closed* until the FUEL LOW CENTER advisory message is again displayed. Then continue flight using main tank-to-engine fuel feed with all operable main tank boost pumps on and the crossfeed valves closed.*

With center tank fuel quantity less than or equal to 10,500 lbs (4,762 kgs), use main tank-to-engine fuel feed with all operable main tank boost pumps on and the crossfeed valves closed.* Once in stabilized cruise, if the FUEL IN CENTER advisory message displays, use center tank fuel with all operable boost pumps on and the crossfeed valves closed* until the FUEL LOW CENTER advisory message is displayed. Then continue flight using main tank-to-engine fuel feed with all operable main tank boost pumps on and the crossfeed valves closed.*

> * A crossfeed valve is opened for minimum fuel operation. To correct fuel imbalance, open a crossfeed valve and turn the low tank boost pumps off.

Fuel System - Useable Tank Quantities A121788

	Volume	Maximum Weight	
	U.S. Gallons	LB	KG
Main L or R	9,560	67,876	30,788
Center	26,100	185,310	84,055

Maximum Airspeed Limits A144760

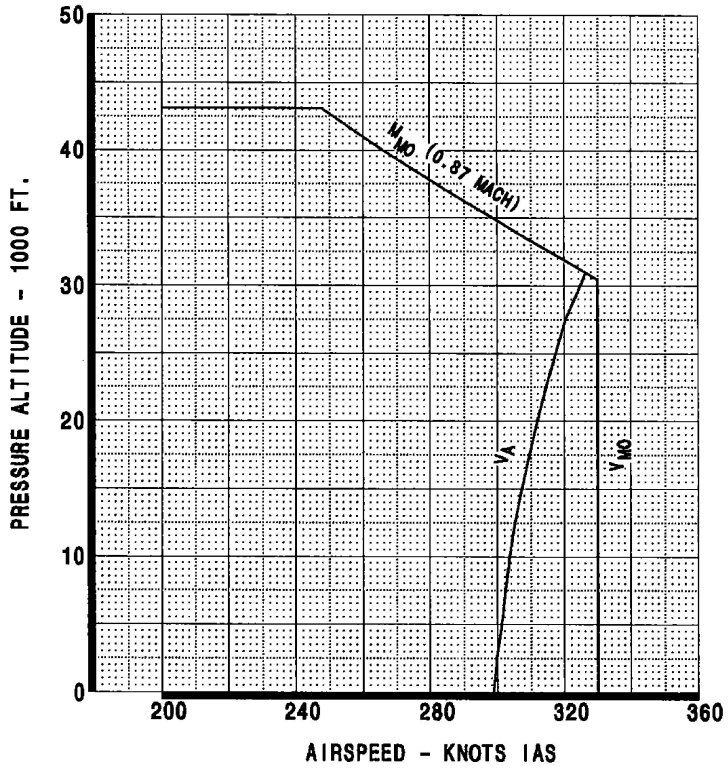
P.C. I700107000
D041W602-1 PG. 1-7

- THE MAXIMUM PRESSURE ALTITUDE FOR OPERATING WITH FLAPS DOWN IS 20,000 FT.

FLAP PLACARD SPEEDS	
FLAP POSITION	V_{FE} - KNOTS IAS
1	255
5	235
15	215
20	195
25	185
30	170

- MAXIMUM LANDING GEAR OPERATING SPEEDS: V_{LO} = 270 KNOTS IAS, M_{LO} = 0.82 MACH
- MAXIMUM LANDING GEAR EXTENDED SPEEDS: V_{LE} = 270 KNOTS IAS, M_{LE} = 0.82 MACH

ERIC C. TAYLOR
777-200 IGW
APPROVED V.HILL
DATE 12-19-96



Maximum Operating Limit Speed A121788

The maximum operating limit speed shall not be deliberately exceeded in any regime of flight.

Note: 1. All airspeed markings and placards in the airplane are shown as indicated (IAS) values, based on the primary static pressure source. The Air Data Inertial Reference System (ADIRS) corrects for static source position error and essentially displays knots CAS inflight. V_{MO}/M_{MO}, VLE or flap placard speed (whichever is lower) is indicated by the lower edge of the red and black colored region of the speed tape on the Primary Flight Displays (PFD).

2. V_A is defined as the speed above which maneuvers involving full application of rudder, ailerons or elevator, or maneuvers involving angles of attack near stall, should be avoided.

Operational Limits A121788

Applicable to ASN(s) : 29174, 29175, 30859, 30860, 30861, 30862, 35525

Runway slope -- ±2%

Maximum Operating Altitude -- 43,100 feet pressure altitude

Maximum Takeoff and Landing Altitude -- 8400 feet pressure altitude

Maximum Takeoff and Landing Tailwind Component -- 10 knots

Takeoff, Landing, and Enroute Operational Limits - use the Environment Envelope chart within the Performance Chapter.

Continued on next page

Operational Limits A121788

Applicable to ASN(s) : 40198, 40199

Runway slope -- ±2%

Maximum Operating Altitude -- 43,100 feet pressure altitude

Maximum Takeoff and Landing Altitude -- 8400 feet pressure altitude

Maximum Takeoff and Landing Tailwind Component -- 15 knots*

* The capability of the airplane has been satisfactorily demonstrated for takeoff, and manual and automatic landings with tailwinds up to 15 knots. This finding does not constitute operational approval to conduct takeoffs and landings with tailwind components in excess of 10 knots.

Takeoff, Landing, and Enroute Operational Limits - use the Environment Envelope chart within the Performance Chapter.

Continued on next page

Section Operational Limits, continued from previous page

Performance Configuration A121788

Performance limits and the airplane configuration, as presented under the Performance Configuration section of the Performance Chapter, must be observed.

Performance Configuration - Brakes A121788

Brake part numbers in the same category produce equal braking performance. This does not allow interchangeability of the brakes themselves.

Category A: Boeing Part Number S294W511-210,-310.

Performance Configuration - Tires A144760

Approved tires that are capable of at least 235 mph takeoff speed and 260 mph overspeed landing must be installed in order to utilize the maximum structural and performance-limited takeoff weights. Tire size, minimum load rating and minimum ply rating for various maximum taxi weights are shown in the table below.

		Maximum Taxi Weight - LB (KG)	
		517,000 (234,507) or Lower	Up to 658,000 (298,463)
	Tire Size	**Minimum Tire Load Rating - LB (Minimum Ply Rating)**	
Main Gear	50 x 20.0R22	45,200 (26 Ply)	57,100 (32 Ply)
Nose Gear	42 x 17.0R18	36,100 (26 Ply)	36,100 (26 Ply)

Continued on next page

Section Performance Configuration - Tires, continued from previous page

Rests - Lower Crew Rest Compartment A121788

(If Installed)

The lower crew rest compartment may not be occupied, and the main entry hatch must be closed, during taxi, takeoff, or landing.

Rests - Overhead Flight Attendant Rest (OFAR) A121788

(If installed)

Overhead Flight Attendant Rest (OFAR) is to be occupied by crew members only if they have been trained in use of the crew rest evacuation routes, firefighting procedures and depressurization procedures.

Rests - Overhead Flight Crew Rest (OFCR) A121788

(If Installed)

The Overhead Flight Crew Rest (OFCR) is to be occupied by crew members only if they have been trained in the use of the crew rest evacuation routes, firefighting procedures and depressurization procedures.

Occupancy of the OFCR during taxi, takeoff and landing is restricted to flight crew members who the pilot in command has determined are trained in the emergency procedures of the OFCR compartment and able to rapidly use the evacuation routes.

5G C-Band Wireless Broadband Interference A232459

Non-Radio Altimeter Tolerant Airplanes

(Required by AD 2023-12-05)

Approaches and Landings in the Presence of Radio Altimeter 5G C-Band Interference

Due to the presence of 5G C-Band wireless broadband interference, dispatching or releasing to airports, and approaches or landings on runways, in the contiguous U.S. airspace is prohibited.

Radio Altimeter Tolerant Airplanes

(Required by AD 2023-12-05)

Approaches and Landings in the Presence of Radio Altimeter 5G C-Band Interference

Due to the presence of 5G C-Band wireless broadband interference, dispatching or releasing to airports, and approaches or landings on runways, in the contiguous U.S. airspace is prohibited unless operating at a 5G C-Band mitigated airport as identified in an FAA *Domestic Notice*.

General A121788

The operating procedures contained in this manual have been developed and recommended by the manufacturer and approved by the FAA for use in the operation of this aircraft. These procedures are provided as guidance and should not be construed as prohibiting the development of equivalent approved procedures.

This section provides the abbreviated non-normal procedures which arise out of system malfunction or failure, and/or which involve the use of special systems or the alternative use of regular systems to protect crew and passengers from serious harm, and to maintain the airworthiness of the airplane.

Procedures contained herein assume:

a. Aural warnings are silenced.

b. Oxygen masks and smoke goggles (if installed) are donned when cabin altitude is excessive or ambient air is contaminated, and normal oxygen is selected if ambient air is not contaminated.

c. Landing at nearest suitable airport is accomplished in the event of fire or persistent smoke.

d. The flight crew goes on 100% oxygen whenever a hand-held fire extinguisher is to be discharged in the cockpit, or when required because of smoke accumulation.

Aborted Engine Start A121788

Fuel Control Switch . . . . . CUTOFF

Alternate Flap Operation A121788

Select the ALTN FLAPS ARM switch to ALTN, then turn the ALTN FLAPS selector to extend or retract the trailing edge and/or leading edge flaps.

Note: The flap load relief and flap asymmetry protection systems are inoperative. Flaps can only be extended to position 20.

Alternate Landing Gear Extension A121788

With the landing gear lever in the DN position, extend the landing gear by selecting DOWN on the ALTN GEAR switch and holding for 1 second. Reduction of airspeed to below 240 KIAS may be necessary for the landing gear to lock down.

Cabin Altitude (E) A121788

(Rapid Depressurization)

If the EICAS message CABIN ALTITUDE is displayed:

Oxygen Masks . . . . . ON
Crew Communications . . . . . ESTABLISH
Cabin Altitude and Rate . . . . . CHECK

If cabin altitude cannot be controlled:

Passenger Oxygen Switch . . . . . ON
Descent . . . . . ACCOMPLISH

Without delay, close thrust levers, extend speed brakes, and descend at V_{MO} / M_{MO} to the lowest safe altitude or 10,000 feet, whichever is higher. If structural integrity is in doubt, limit airspeed and avoid high maneuvering loads.

The following procedures are no longer applicable upon incorporation of AIMS Blockpoint V14 or later:

When at level off:

If both pack OFF lights are illuminated and the PACK L+R message (AIMS Blockpoint V03 and prior to Blockpoint V14) or PACK L and PACK R messages (AIMS Blockpoint V01 and earlier) are NOT displayed:

Outflow Valve Switches (Both) . . . . . MAN
Outflow Valve Manual Switches (Both) . . . . . OPEN

Hold both switches to OPEN position for 30 seconds.

In-Flight Entertainment System/Passenger Seat Power Switch . . . . . OFF
Cabin/Utility Power Switch . . . . . OFF
Shoulder and Foot Heaters (All) . . . . . OFF
Flight Deck Lighting . . . . . SET
Flight Deck Door . . . . . OPEN
Flight Deck Sunvisors . . . . . INSTALL

Instruct flight attendants to close cabin window shades during daylight operations.

Plan to land at the nearest suitable airport.

Cabin Altitude Automatic A121788

If the EICAS message CABIN ALTITUDE AUTO is displayed, push both outflow valve switches to MAN and control the outflow valves manually to maintain the desired cabin altitude.

Ditching (E) A144760

Jettison fuel as required. Select the GEAR OVRD and TERR OVRD (if installed) switches to OVRD, turn pack control selectors off, close outflow valves and turn on passenger signs.

For ditching approach: gear up, flaps 30, speed $V_{REF}30$.

Door Fwd Cargo or Door Aft Cargo A121788

If the EICAS message DOOR FWD CARGO is displayed, or on airplanes with the large aft cargo door installed, the EICAS message DOOR AFT CARGO is displayed, set the landing altitude selector to 8000 feet and descend to the lowest safe altitude or 8,000 feet, whichever is higher.

Dual Engine Failure Stall (E) A121788

Fuel Control Switches (Both) . . . . . CUTOFF, THEN RUN
Ram Air Turbine Switch . . . . . PUSH

Electrical AC Bus(es) Off A121788

If the EICAS message ELEC AC BUS L/R is displayed, attempt one reset of the generator control switch.

If ELEC AC BUS L/R remains displayed, turn on APU (if available).

If ELEC AC BUS L/R remains displayed with APU operating, attempt one reset of the bus tie switch.

Engine Failure A121788

If engine speed is below idle, close the affected thrust lever and place the fuel control switch to CUTOFF. If there is no apparent damage, attempt to restart the engine.

Engine Fuel Filter A121788

If both EICAS advisory messages ENG FUEL FILTER L and ENG FUEL FILTER R are displayed, erratic engine operation and flameout may occur due to fuel contamination.

Engine Inflight Restart A121788

If X-BLD is displayed, place the start/ignition selector to START and the fuel control switch to RUN. If X-BLD is not displayed, place the fuel control switch to RUN.

Engine Oil Pressure A121788

If the EICAS message ENG OIL PRESS L/R is displayed, shut down the affected engine.

Engine Oil Temperature A121788

If the EICAS message ENG OIL TEMP L/R is displayed, retard the affected thrust lever until the message is no longer displayed or the thrust lever is closed. If engine oil temperature does not decrease below the red line limit, or remains in the amber band longer than 20 minutes, place the affected fuel control switch to CUTOFF.

Engine Severe Damage or Separation (E) A121788

If the engine has separated or severe damage or airframe vibration is indicated:

Thrust Lever . . . . . CLOSE
Fuel Control Switch . . . . . CUTOFF
Engine Fire Switch . . . . . PULL

If high airframe vibration occurs and continues after engine is shut down, without delay reduce airspeed and descend to a safe altitude which results in an acceptable vibration level. If high airframe vibration returns and further airspeed reduction and descent is not practical, increasing the airspeed may reduce the vibration.

Evacuation (E) A121788

Parking Brake Lever . . . . . SET
Outflow Valve Switches (Both) . . . . . MAN
Outflow Valve Manual Switches (Both) . . . . . OPEN
Hold until the outflow valves are fully open.

Fuel Control Switches (Both) . . . . . CUTOFF
Advise the cabin to evacuate. Advise the tower.

Engine Fire Switches (Both) . . . . . PULL
APU Fire Switch . . . . . OVERIDE AND PULL

If an engine or APU fire warning light is illuminated:

RELATED FIRE SWITCH . . . . . ROTATE AND HOLD
Rotate to the stop and hold for one second.

Fire APU (E) A121788

APU Fire Switch . . . . . PULL, ROTATE, AND HOLD
Rotate to the stop and hold for 1 second.

Fire Cargo (E) A121788

(Class C compartments)

If the EICAS message FIRE CARGO FWD/AFT is displayed, push the affected cargo fire extinguishing armed switch to ARMED and push the discharge switch to discharge the cargo fire bottles. Set the landing altitude selector to 8000 feet. In addition, if the FIRE CARGO AFT is displayed, notify flight attendants to evacuate the lower crew rest compartment (if installed), and close doors. At top of descent, push the landing altitude selector to allow cabin pressurization system to automatically schedule landing altitude.

Fire Engine (E) A121788

If the EICAS message FIRE ENG L/R is displayed:

Autothrottle Arm Switch . . . . . OFF
Thrust Lever . . . . . CLOSE
Fuel Control Switch . . . . . CUTOFF
Engine Fire Switch . . . . . PULL

If FIRE ENG L/R message is still displayed:

Engine Fire Switch . . . . . ROTATE

If after 30 seconds the FIRE ENG L/R message is still displayed:

Engine Fire Switch . . . . . ROTATE TO OTHER BOTTLE

Fire Wheel Well (E) A121788

If the EICAS message FIRE WHEEL WELL is displayed, move the landing gear lever to the down position at V_{LO} or lower.

If the landing gear must be retracted for airplane performance, it may be retracted 20 minutes after the FIRE WHEEL WELL message is no longer displayed.

Flaps Drive A121788

If the EICAS message FLAPS DRIVE is displayed, do not use alternate flaps.

Flight Control Mode A121788

If the EICAS message FLIGHT CONTROL MODE is displayed, avoid abrupt control inputs. Use flaps 20 and V_{REF} 20 for landing.

Flight Controls A121788

If the EICAS message FLIGHT CONTROLS is displayed, plan to land at the nearest suitable airport. Use flaps 20 and V_{REF} 30 + 20 for landing. The crosswind limit for landing is 20 knots.

Fuel Jettison System A121788

If the EICAS message FUEL JETTISON SYS is displayed, or when jettison is complete, place both fuel jettison nozzle switches and the fuel jettison ARM switch to OFF.

Fuel Leak A121788

If an inflight fuel leak is suspected as the result of a FUEL DISAGREE - PROG 2/2 or INSUFFICIENT FUEL message on the Control Display Unit (CDU), or an EICAS FUEL IMBALANCE message:

Turn off the center wing tank fuel pumps and close both crossfeed valves. Watch for any unusual decrease in fuel tank quantity and/or a fuel imbalance to determine if there is an engine fuel leak.

If an engine fuel leak is confirmed (either visually or by flight deck indications), shut down the affected engine to stop the leak and retain the remaining fuel. Plan to land at the nearest suitable airport.

Fuel Loading with Confirmed Failed Main Tank Unit A147720

If a main tank is scheduled to be full and a Central Maintenance Computing Function (CMCF) fault message TANK UNIT CIRCUIT IS OPEN OR SHORTED or TANK UNIT SIGNAL IS OUT OF RANGE is present, early refuel shutoff can occur for the affected main tank. The main tanks must be scheduled to be full if the center tank fuel is loaded. A quantity in each main tank of 59,600 pounds (27,034 kilograms) or greater is considered full when the CMCF fault message TANK UNIT CIRCUIT IS OPEN OR SHORTED or TANK UNIT SIGNAL IS OUT OF RANGE is present.

Fuel Quantity Low A121788

If the EICAS message FUEL QTY LOW is displayed, turn either crossfeed valve switch ON, all fuel pump switches ON, and avoid high nose-up attitudes and excessive acceleration.

Fuel Scavenge System A144760

For airplanes with a maximum usable fuel tank quantity (all tanks) of 321,062 pounds (145,631 kilograms) with AIMS Blockpoint V14 or later installed.

If the fuel scavenge system is inoperative, select the PERF INIT page and add 2,400 pounds (1,088 kilograms) to the required reserves. Select the PROGRESS page. Check the DESTINATION FUEL ESTIMATE. Verify that adequate fuel is available in the left and right main tanks to complete the flight. Remaining center tank is unusable.

Ground Proximity Warning System A121788

When a ground proximity warning occurs; aggressively pull up, apply engine thrust and climb until the warning ceases or clear of terrain.

When a ground proximity caution occurs; correct the flight path/configuration so that the caution alert ceases.

The Ground Proximity Warning System (GPWS) Mode 4 function may be deactivated to prevent nuisance warnings when following approved procedures which specify landing with flaps not in normal landing position or landing gear up.

Hydraulic Pump Overheat A121788

If the EICAS message HYD OVERHEAT is displayed for any pump, turn the affected pump OFF.

Hydraulic System Low Pressure A121788

If the EICAS message HYD PRESS SYS L/R is displayed, turn the affected demand pump(s) ON. If low system pressure is still indicated, turn the affected primary and demand pumps OFF. If the EICAS message HYD PRESS SYS C is displayed, turn the C1 or C2 demand pump ON. If low system pressure is still indicated, turn the C2 primary pump OFF and the C1 and C2 demand pumps OFF. With the center hydraulic system inoperative, alternate landing gear and secondary mode flap extension will be required.

Main Gear Brace A121788

If the EICAS message MAIN GEAR BRACE is displayed, turn all fuel pump switches off when at pattern altitude.

One Engine Inoperative Landing A121788

Use flaps 20 and V_{REF} 20 for landing approach. Use flaps 5 for go-around. If landing using flaps 30, use V_{REF} 30 for landing approach and flaps 20 for go-around.

Overheat Engine A121788

If the EICAS message OVERHEAT ENG L/R is displayed, turn the engine bleed switch off. Slowly retard the affected thrust lever until the message is no longer displayed or the thrust lever is closed. If OVERHEAT ENG message remains displayed, place the affected fuel control switch to CUTOFF.

Pitch Down Authority A121788

If the EICAS message PITCH DOWN AUTHORITY is displayed, avoid speedbrake use and rapid thrust increases.

Pitch Up Authority A121788

If the EICAS message PITCH UP AUTHORITY is displayed, do not extend flaps any further until on approach. If flap position is 15 or less, use flaps 5 and V_{REF} 30 + 40 for landing and flaps 5 for go-around. If flap position is 20 or greater, use flaps 20 and V_{REF} 30 + 20 for landing.

Do not use autoland.

Primary Flight Computers A121788

If the EICAS message PRI FLIGHT COMPUTERS is displayed, avoid abrupt control inputs. Use flaps 20 and V_{REF} 20 for landing.

Smoke Fire or Fumes (E) A121788

Use oxygen masks and smoke goggles, if required, establish crew communications, and select the in-flight entertainment (IFE)/passenger seats switch (if installed), both recirculation fan switches, the gasper switch (as installed) and the APU bleed air switch to OFF.

Do the Smoke or Fumes Removal procedure if needed.

If the source of the smoke, fire or fumes is both obvious and can be extinguished quickly, isolate and extinguish the source. If possible, remove electrical power from affected equipment.

If the source is visually confirmed to be extinguished and the smoke or fumes are decreasing, continue flight at captain's discretion.

If source is not visually confirmed to be extinguished continue with the following steps:

Select the cabin/utility power switches to OFF.

Initiate a diversion to the nearest suitable airport.

If time permits prior to landing, isolate each side of the air conditioning system one at a time.

Smoke or Fumes Removal (E) A121788

Do this procedure only when directed by the **Smoke, Fire or Fumes (E)** section.

When smoke removal is required, close the flight deck door and press the Equipment Cooling Switch to OVRD. If smoke source is in the forward cabin and outflow valve manual control is available, close the aft outflow valve. If smoke is in the aft cabin and outflow valve manual control is available, close the forward outflow valve.

Stabilizer Greenband A121788

The STAB GREENBAND message on EICAS on the ground indicates that greenband selection does not correspond to airplane weight and center of gravity. Check airplane loading, confirm gross weight and c.g. position entries and check that stabilizer setting is appropriate for loading configuration.

Stabilizer Uncommanded or Inoperative A121788

If the EICAS message STABILIZER is displayed:

Stabilizer Cutoff Switches . . . . . CUTOUT
Do not exceed current airspeed.

Use flaps 20 and V_{REF} 30 + 20 for landing.

Wing Anti-Ice Valve Failed Open A211711

If the EICAS message ANTI-ICE VLV WING L or ANTI-ICE VLV WING R is displayed, rotate the WING ANTI-ICE switch to the OFF position. Select the ENG BLEED AIR switch for the affected side (L or R) to the Off position. Select the BLEED AIR ISLN switch for the affected side (L or R) to the Off position. Select the PACK switch for the affected side (L or R) to the Off position.

General A121788

Normal procedures in this chapter include those procedures where an action or sequence of actions, or prohibition of incorrect actions, which if not observed, could result in an adverse effect on the airworthiness of the airplane or the safety of the passengers and crew.

Normal procedures peculiar to the operation of the Boeing 777 are presented in abbreviated form. They supplement procedures common to the operation of modern jet transport airplanes.

Refer to the **Performance Conditions and Procedures** sections of the Performance Chapter for routine procedures used to establish the performance of the airplane.

Air Conditioning Packs A190939

Packs Off Takeoff

After engine thrust is reduced from takeoff to climb and before reaching 3,000 feet above the field elevation, position both pack control selectors to AUTO.

Air Data Inertial Reference System (ADIRS) A180361

After ground stationary alignments between 78 degrees 15.0 minutes north and 78 degrees 15.0 minutes south latitudes, ADIRU inertial position satisfies the performance requirements of FAA AC 25-4 during time-in-navigation not exceeding 18 hours and may provide the primary means of navigation for flights not exceeding 18 hours duration.

During navigation, the ADIRU will provide valid magnetic heading and track between 82 degrees North and 82 degrees South latitudes. The northern boundary is 82 degrees north latitude, except from 80 degrees west to 130 degrees west longitude the boundary is restricted to 70 degrees north latitude. The southern boundary is 82 degrees south latitude, except from 120 degrees east to 160 degrees east longitude the boundary is restricted to 60 degrees south latitude.[1]

[1] When Boeing Service Bulletin 777-34-0201 or production equivalent is incorporated, the northern boundary is 82 degrees north latitude, except from 80 degrees west to 170 degrees west longitude the boundary is restricted to 73 degrees north latitude. The southern boundary is 82 degrees south latitude, except from 120 degrees east to 160 degrees east longitude the boundary is restricted to 60 degrees south latitude.

Compliance with the design requirements for magnetic heading and magnetic track angle accuracy within the above boundaries must be maintained for the continued airworthiness of the airplane as these accuracies degrade over time relative to the earth's ever changing geomagnetic reference field. To maintain continuous world-wide compliance, new Magnetic Variation (MagVar) tables are developed and certified for production and retrofit into the ADIRU every 10 years. Failure to maintain the installed ADIRU MagVar table in compliance can result in specific operational limitations (see the **Electronics-Air Data Inertial Reference System (ADIRS)** section of the **Certificate Limitations** chapter). Information for determining which specific Epoch MagVar table is loaded in the ADIRU, and geographic maps which show the location and magnitude of the specific MagVar table errors relative to current and projected National Oceanic and Atmospheric Administration (NOAA) World Magnetic Model (WMM) data is provided in Boeing document D6-85262, "Guidance for Airplane Flight Operations Using Inertial Reference Systems with Magnetic Variation Tables", revision A or later.

When the ADIRU has failed, the SAARU automatically provides backup magnetic heading which will drift in a manner similar to a directional gyro and requires crew monitoring and periodic manual updates to ensure adequate accuracy.

Air Traffic Control Radar Beacon System A146604

Mode S Transponder
(If installed)

Mode A, C and S functions with respect to the Traffic Alert and Collision Avoidance System (TCAS) have been demonstrated for proper operation.

Selecting Standby mode on the ATC/TCAS control panel will disable all of the following functions:
1. All ATC transponder modes (Modes A/C/S)
2. ADS-B Out
3. TCAS II

Elementary Surveillance
(If installed)

Elementary surveillance functions have been demonstrated for proper operation.

Elementary Surveillance - Version 2 ATC Transponder
(If installed)

The installed transponder system is able to respond to interrogations in Mode A, C and S and is fully compliant with the requirements of CS ACNS.D.ELS (Mode S Elementary Surveillance).

Enhanced Surveillance
(If installed)

Enhanced surveillance functions have been demonstrated for proper operation. Track angle rate is not available.

Enhanced Surveillance - Version 2 ATC Transponder
(If installed)

The installed transponder system is able to respond to interrogations in Mode A, C and S and is fully compliant with the requirements of CS ACNS.D.EHS (Mode S Enhanced Surveillance).

Extended Squitter
(If installed)

Extended squitter transmissions have been demonstrated for proper operation and non-interference but have not been certified.

The following is applicable only if the extended squitter is installed and the Multi Mode Receivers (MMR) is interfaced with the ATC Transponders.

Extended Squitter transmission has been demonstrated for proper operation per EASA AMC 20-24 for broadcast of ADS-B related position information, with the following exceptions.

1. The extended squitter transmission system does not take into account the system's uncompensated

Continued on next page

Section Air Traffic Control Radar Beacon System, continued from previous page A146604

latency into its transmitted horizontal quality indicator value.

2. The extended squitter transmission system does not base the transmitted horizontal quality indicator solely on the integrity information from the horizontal position source. The horizontal quality indicator value may be encoded based on the horizontal position source's accuracy quality information.

3. The extended squitter transmission system does not have the capability to transmit the discrete emergency codes (7500, 7600, 7700). Instead the extended squitter system will transmit a generic emergency indicator when any emergency code is dialed into the control panel.

Extended Squitter / ADS-B Out Surveillance - Version 2
(If installed)

The installed ADS-B OUT system has been shown to meet the equipment requirements of 14 CFR 91.227 and is fully compliant with the requirements of CS.ACNS.D.ADSB (1090 MHz Extended Squitter ADS-B OUT).

Autopilot Flight Director System A150438

Demonstrated Conditions

The following conditions were demonstrated during flight test.

The autopilot and flight director have been demonstrated to perform satisfactorily when the autopilot is engaged in the takeoff mode at 200 feet AGL.

The speed selected for automatic approach using the autothrottle was V_{REF} + 5 knots for all allowable wind conditions.

The autopilot and flight director have been demonstrated to perform satisfactorily on U.S. Type I, II or III ILS facilities with the flight crew monitoring the performance of the system.

The autopilot and flight director have been demonstrated to perform satisfactorily for a non-precision approach down to 50 feet below a non-precision minimum with the flight crew monitoring the performance of the system.

The system has been demonstrated to perform satisfactorily for approach and automatic landing both with and without automatic throttles.

The demonstrated altitude loss during an automatic go-around initiated below 100 feet AGL is listed below:

GA Altitude (ft AGL)	Altitude Loss (ft)
70 to 100	27
60	27
50	27
40	22
30	20
20	10
10	5

The autopilot system has been demonstrated to meet the performance requirements of FAA Advisory Circular 20-57A when using U.S. Type II or Type III ILS ground facilities with landing flaps 30 selected.

The automatic landing system has been demonstrated to perform satisfactorily in the following wind conditions:

Headwind: 33 knots
Tailwind: 22 knots
Crosswind: 27 knots

Refer to the Certificate Limitations Chapter for the limiting wind conditions.

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Section Autopilot Flight Director System, continued from previous page A150438

Rollout performance has been demonstrated on both wet and dry runways. Each autobrake setting has been demonstrated.

Demonstrated compliance with the AFDS airworthiness performance and integrity standards does not constitute approval to conduct operations in low weather minima conditions.

Automatic Landing With One Engine Inoperative

The autopilot system has been demonstrated to perform satisfactory automatic landings with one engine inoperative at the beginning of the approach. The demonstrated configuration was:

LAND 3 OR LAND 2 annunciated
Flaps 20 or Flaps 30

The automatic landing system has been demonstrated to perform satisfactorily with one engine inoperative in the following wind conditions:

Headwind: 32 knots
Tailwind: 23 knots
Crosswind: 28 knots

The performance was demonstrated with and without autothrottle on the operative engine, and with and without Thrust Asymmetry Compensation.

The automatic landing system has been demonstrated to perform satisfactorily following an engine failure during approach.

Single Engine Autothrottle Servo

The automatic landing system has been demonstrated to perform satisfactorily during approach and landing with one autothrottle functioning and the other engine operating at nominal thrust.

Automatic Landing With A Single Hydraulic Failure

The automatic landing system has been demonstrated to perform satisfactorily with a single hydraulic failure to either the left, center or right system.

Verification Altitude For Autoland

On approach for autoland, verify LAND 2 or LAND 3 status, as appropriate, at 500 feet AGL.

Continued on next page

Section Autopilot Flight Director System, continued from previous page A150438

Low Weather Minima - Automatic Landing - Fail-Operational
(CAT III with DH below 50 feet and CAT III with no DH)

The autopilot system has been shown to meet the applicable airworthiness performance and integrity criteria established for a fail operational system to comply with FAA Advisory Circulars 20-57A and 120-28C (Appendix 1 and 3*) for an automatic landing system with the following functions operative and LAND 3 annunciated:

Autoland status annunciation on both PFDs
Autothrottle
Independent ILS and radio altitude sources on the PFD for each pilot, i.e. the following EICAS messages are not displayed:
SGL SOURCE DISPLAYS
SGL SOURCE RAD ALT
SINGLE SOURCE ILS

* Except for Paragraph 5(a) - protection from inadvertent disengagement of the autopilot.

Low Weather Minima - Automatic Landing - Fail-Passive

The autopilot system has been shown to meet the applicable airworthiness performance and integrity criteria established for a fail passive system to comply with FAA Advisory Circulars 20-57A and 120-28C (Appendix 1 and 2*) for an automatic landing system with the following functions operative and LAND 2 annunciated:

Autoland status annunciation on both PFDs
Independent ILS and radio altitude sources on the PFD for each pilot, i.e. the following EICAS messages are not displayed:
SGL SOURCE DISPLAYS
SGL SOURCE RAD ALT
SINGLE SOURCE ILS

* Except for Paragraph 5(a) - protection from inadvertent disengagement of the autopilot.

The demonstration for Category IIIa fail-passive autoland operations with LAND 2 annunciated included a requirement for a go-around if a subsequent autopilot system failure were to be detected on approach.

CAUTION: If the autopilot disconnects during an engine out go-around, loss of autopilot rudder control can result in large yaw and roll excursions if thrust asymmetry compensation is inoperative.

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Section Autopilot Flight Director System, continued from previous page A150438

Low Weather Minima - Autopilot Approach

The autopilot system has been shown to meet the applicable airworthiness performance and integrity requirements for Category II operations in accordance with FAA Advisory Circular 120-29, Appendix 1 for automatic approach with the following functions operative and LAND 3 or LAND 2 annunciated:

Independent ILS and radio altitude sources on the PFD for each pilot, i.e. the following EICAS messages are not displayed:

- SGL SOURCE DISPLAYS
- SGL SOURCE RAD ALT
- SINGLE SOURCE ILS

Low Weather Minima - Flight Director

The flight director system has been shown to meet the applicable airworthiness performance and integrity requirements for Category II operations in accordance with FAA Advisory Circular 120-29, Appendix 1 for manual approach with the following functions operative:

Normal flight controls
ADIRU
Independent ILS and radio altitude sources on the PFD for each pilot, i.e. the following EICAS messages are not displayed:

- SGL SOURCE DISPLAYS
- SGL SOURCE RAD ALT
- SINGLE SOURCE ILS
- SINGLE SOURCE F/D

Extended Range Operations A121788

The type design reliability and performance of this airplane/engine combination has been evaluated in accordance with 25-ANM-84 FAA Special Condition: "EXTENDED RANGE OPERATIONS OF BOEING MODEL 777 SERIES AIRPLANE", dated July 1, 1994, and found suitable for extended range operations. This finding does not constitute approval to conduct extended range operations.

Flight Controls A121788

Check flight controls after engine start for full freedom of motion and that they return to center.

Flight Deck Communications System (Datalink) A201630

The following design approval does not constitute operational authorization. See AC 90-117 for operational authorization.

The 777 COMM Function Operational Software is approved to the criteria contained in the FAA Advisory Circular for the Guidelines for Design Approval of Aircraft Data Link Communication Systems. The safety and interoperability requirements are contained in the FAA and EASA approved Boeing 777 Air Traffic Services (ATS) Capabilities document.

CPM COMM OPS	FAA Advisory Circular	Boeing Document
HNP5A-AL02-1013 HNP5D-AL02-1014	20-140B	D613W042-01, 777 Air Traffic Services (ATS) Capabilities Generation 9.
HNP50-AL02-1008 HNP59-AL02-1010 HNP58-AL02-1011 HNP5B-AL02-1012	20-140B	D613W040-01, 777 Air Traffic Services (ATS) Capabilities Generation 8.
HNP5C-AL02-1004 HNP5D-AL02-1005 HNP5E-AL02-1006 HNP5F-AL02-1007 3162-HNP-002-15 3160-HNP-002-17	20-140	D282W725-06, Air Traffic Services Systems Requirements and Objectives (ATSSR&O) Generation 7.
HNP5A-AL02-1002 HNP5B-AL02-1003	20-140	D282W725-05, Air Traffic Services Systems Requirements and Objectives (ATSSR&O) Generation 6.
HNP59-AL02-1001	20-140	D828W725-01, Air Traffic Services Systems Requirements and Objectives (ATSSR&O) Generation 5.
3167-HNP-002-10	20-140	D923W335, Revision A, Air Traffic Services Systems Requirements and Objectives Generation 4.
316F-HNP-002-09	20-140	D243W018-11, Revision A, Air Traffic Services Systems Requirements and Objectives (ATSSR&O) Generation 3.
3161-HNP-002-07 316E-HNP-002-008	20-140	D243W018-10, Air Traffic Services Systems Requirements and Objectives (ATSSR&O) Generation 2.
Appendix F of the above documents covers system anomalies which may impact specific uplink and downlink operation/message content.		

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Section Flight Deck Communications System (Datalink), continued from previous page A201630

The FAA has approved the aircraft data link system to the criteria contained in the Advisory Circular for the following data link capabilities:

Data Link Type	Aircraft-allocated Performance	Sub-Networks	Software Part Numbers
FANS 1+	CPDLC at RCP 240 and RCP 400 USING: ADS-C at RSP 180 and RSP 400 using:	VDL MA/2, SATCOM (Inmarsat), HFDL	HNP5A-AL02-1013 HNP5D-AL02-1014
FANS 1/1+	None	VDL MA/2, SATCOM (Inmarsat), HFDL	All
ATN B1	RTCA DO-290/ Eurocae ED-120 using:	VDL, M2	HNP50-AL02-1008 HNP59-AL02-1010 HNP58-AL02-1011 HNP5B-AL02-1012 HNP5A-AL02-1013 HNP5D-AL02-1014
ACARS ATS	None, using	VDL MA/2, HFDL, SATCOM (Inmarsat)	All

The following is applicable upon incorporation of AIMS Blockpoint V17 or later:

The ATN B1 data link system meets requirements of the EU Commission Regulation (EC) No 29/2009 using VDL M2. for continental applications.

The CPDLC installation is limited to provide a supplementary means of communication; voice shall remain the primary means of communication. This CPDLC installation is limited to routine Datalink exchanges.

The aircraft ATC Datalink system support multi-frequency operation as defined in ARINC 631-5.

Per the procedures identified by the ICAO Global Operational Data Link Document, the flight crew shall reject and not execute any air traffic control data link clearance which is identified with "UPLINK DELAY EXCEEDED".

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The COMPANY datalink function has been developed to a design assurance level commensurate with a minor hazard effect classification and has been demonstrated to comply with airworthiness requirements contained in RTCA DO-296 and FAA Advisory Circular 20-140/140B. Installation of the COMPANY datalink function does not include operational approval for it's use.

The Operator must receive approval from their Regulatory Authority, in accordance with DO-296 or equivalent prior to use of COMPANY datalink function.

The following procedures are one means which may be used to verify Pre-Departure Clearance, Digital-Automatic Terminal Information Service, Oceanic Clearances, Weight and Balance and Takeoff Data messages if transmitted via the COMPANY datalink function.

Pre-Departure Clearance:

Verify (compare) the ORIG/DEST and Flight Number of the latest filed flight planversus the digital pre-departure clearance and initiate voice contact with Air Traffic Control if any question/confusion exists between the filed flight plan and the digital pre-departure clearance.

Digital-Automatic Terminal Information Service:

Ensure the D-ATIS report message received matches the Airport ID stated in the D-ATIS request message. Verify that the D-ATIS altimeter setting numeric value and alpha value are identical (e.g., comparison of known field elevation to the current altitude displayed on the altimeter). If the D-ATIS altimeter setting numeric value and alpha value are different or the alpha value is not provided, do not accept the D-ATIS altimeter setting.

Oceanic Clearances:

Verify (compare) the ORIG/DEST and Flight Number of the latest filed flight planversus the digital oceanic clearance and initiate voice contact with Air Traffic Control if any question/confusion exists between the filed flight plan and the digital oceanic clearance.

Weight and Balance:

Verify contents of W&B message to ensure receipt of the correct W&B message (e.g. city pair, flight number, registration number, manifest number, crew identification or ICAO address of airplane) and if necessary revert to voice communications if any question/confusion exists. Verify that the Weight and Balance numeric and alphabetic values are identical. If the Weight and Balance numeric and Alphabetic values are different, do not accept the Weight and Balance data.

Takeoff Data:

Verify contents T/O Data message to ensure receipt of the correct T/O Data message (e.g., citypair, flight number, registration number, manifest number, crew identification or ICAO address of airplane) and if necessary revert to voice communications if any question/confusion exists. Verify that the Takeoff Data numeric and alphabetic values are identical. If the Takeoff Data numeric and alphabetic values are different, do not accept the Takeoff Data message.

Flight Management Computer System (FMCS) A152148

The following FMCS demonstrations do not constitute operational approval.

The Flight Management Computer System (FMCS) has been shown to meet the requirements of FAA Advisory Circular (AC) 25-15 for long range navigation with the following equipment operational at departure:

One Flight Management Computing Function (FMCF); two Control Display Units (CDUs), and the Air Data Inertial Reference Unit (ADIRU).

The FMCS has been shown to meet the requirements for RNAV operations (FAA AC 20-130A, JAA AMJ 20X2) with the following equipment operational at departure (unless other appropriate procedures are used):

One FMCF, one CDU, one VHF Omni-directional radio (VOR), one ADIRU, and either one Distance Measuring Equipment (DME) or one Global Positioning System (GPS).

The FMCS has been shown to meet the requirements of FAA AC 20-130A for a multi-sensor area navigation system when operated with radio or Global Position System (GPS) updating. When operated in this configuration, the FMCS may be used for enroute, terminal area operations and instrument approach navigation (excluding ILS, LOC, LOC-BC, LDA, SDF, and MLS approach procedures). The FMCS may be used to fly a RNAV approach procedure that overlays an ILS, LOC, LOC-BC, LDA, SDF, or MLS approach procedure when the localizer facility is inoperative subject to appropriate operational considerations, procedures, constraints, and authorizations.

The FMCS has been shown to meet the requirements of FAA AC 20-129 for vertical navigation (VNAV) for enroute, terminal area operations and instrument approaches (excluding ILS G/S approach procedures). The FMCS may be used to fly a VNAV approach procedure that overlays an ILS glideslope approach procedure when the glideslope facility is inoperative subject to appropriate operational considerations, procedures, constraints, and authorizations.

GPS updating must be disabled for approach operations when operating outside the United States National Airspace, if the FMC database and charts are not referenced to WGS-84 reference datum, unless other appropriate procedures are used.

When using the FMCS without GPS updating to conduct a terminal area procedure or an instrument approach, active DME/DME or VOR/DME updating as appropriate for the procedure being flown should be checked to ensure correct navigation. For an instrument approach, this check should be done no later than the final approach fix. As an alternative, it is acceptable to check for correct navigation using VOR and DME data relative to the map.

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Section Flight Management Computer System (FMCS), continued from previous page A152148

For flight operations without Required Navigation Performance (RNP), the FMCS has been shown to meet the requirements of AC 20-130A for a multi-sensor area navigation system when operated with radio or Global Position System (GPS) updating. When operated in this configuration, the FMCS may be used for enroute, terminal area operations and instrument approach navigation (excluding ILS, LOC, LOC-BC, LDA, SDF, and MLS approach procedures). The FMCS may be used to fly a RNAV approach procedure that overlays an ILS, LOC, LOC-BC, LDA, SDF, or MLS approach procedure when the localizer facility is inoperative subject to appropriate operational considerations, procedures, constraints, and authorizations.

For RNP operations, the demonstrated RNP are as follows:

Demonstrated RNP Flight Operations Versus Mode of Flight			
AIMS Blockpoint (BP) (If installed)	**Mode of Flight**	**FMC GPS Operational**	**FMC GPS Not Operational**
AIMS BP V01 or earlier (1)(3)	LNAV with Autopilot Engaged	0.20 NM	0.26 NM
	LNAV with Flight Director	0.39 NM	0.52 NM
	Manual Flight with the MAP on the ND	0.92 NM	1.79 NM
AIMS BP V03 or later (2)(3)	LNAV with Autopilot Engaged	0.15 NM	0.28 NM
	LNAV with Flight Director	0.28 NM	0.41 NM
	Manual Flight with the MAP on the ND	0.40 NM	1.00 NM
AIMS BP V05 or later (2)(3)	LNAV with Autopilot Engaged	0.11 NM	0.28 NM
	LNAV with Flight Director	0.14 NM	0.28 NM
	Manual Flight with the MAP on the ND	0.80 NM	1.00 NM
AIMS BP V16 or later (2)(3)	LNAV with Autopilot Engaged	0.11 NM	0.28 NM
	LNAV with Flight Director	0.11 NM	0.28 NM
	Manual Flight with the MAP on the ND	0.80 NM	1.00 NM

(1) The demonstrated RNP capabilities are predicated upon the assumptions, definitions, requirements, and analysis in Boeing Document D243W018-7, "RNP Capability of FANS 1 Equipped 777", Revision B, FAA approved version.

(2) The demonstrated RNP capabilities are predicated upon the assumptions, definitions, requirements, and analysis in Boeing Document D243W018-13, "RNP Capability of FANS 1 Equipped 777", Revision F or later, FAA approved version.

(3) When using the MAP on the ND for manual flight for RNP operations of 2 nm or less down to the minimum demonstrated RNP, using a MAP scale of 10 nm or less has been shown to ensure acceptable lateral path tracking performance.

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Section Flight Management Computer System (FMCS), continued from previous page A152148

RNP flight operations are subject to assessment of GPS satellite availability and/or navaid coverage for the selected route.

The FMCS has been shown to meet the requirements for primary means RNP navigation with the following equipment operational at departure:

Two FMCFs, two CDUs, the ADIRU, and two sensors capable of complying with the RNP.

Fuel Quantity Indication System (FQIS) Refueling Station Door Cycling Procedure A211749

The following procedure is not applicable upon incorporation of Boeing Service Bulletin 777-28A0090, or production equivalent.

(Required by AD 2020-11-11)

Note: The flight crew is not expected to complete this procedure but is required to acknowledge that the procedure has been completed.

A fault has been discovered in the fuel quantity indication system (FQIS) where the calculated and displayed fuel quantity can be significantly different from the actual fuel load onboard.

To correct the inaccurate fuel load indication, perform the following after every CWT fueling (adding or removing fuel) and before further flight:
a) Get access to the refueling station door and integrated refuel panel on the left wing.
b) Close and latch the refueling station door on the left wing for a minimum of five (5) seconds. If installed, make sure the right wing refueling station door is closed.
c) Re-open the refueling station door and wait for the fuel quantity display to reset.
d) Make sure that the center or total fuel tank quantities still remain within fuel load sheet requirements. If the fuel quantity is incorrect then accomplish the following actions:

1) Adjust fuel loading as applicable for the fuel upload requirements per the operator’s refuel procedures.
2) Repeat the “Refueling Station Door Cycling Procedure,” starting at step b).

e) Close the refueling station door.
f) Notify the operator after the “Refueling Station Door Cycling Procedure” has been done, and correct fuel load verified.

Reduced Vertical Separation Minimum (RVSM) A121788

The type design reliability and performance of this airplane/engine combination has been evaluated in accordance with FAA Memorandum 91-RVSM, dated 14 March, 1994, "Interim Guidance for Approval of Aircraft for Reduced Vertical Separation Minimum (RVSM) Flight" and is qualified for operation in RVSM airspace. This finding does not constitute approval to conduct reduced vertical separation minimum operations.

Reverse Thrust A121788

Apply symmetric reverse thrust as required until the airplane decelerates to about 60 knots indicated airspeed. Modulate levers to reverse idle detent by taxi speed. Position levers to forward thrust after engines have decelerated to idle.

Severe Turbulent Air Penetration A121788

Flight through severe turbulence should be avoided, if possible.

The recommended procedures for inadvertent flight in severe turbulence are:

1. Airspeed

   Approximately 270 knots below 25,000 feet, or 280 knots/0.82 Mach, whichever is lower at 25,000 feet and above. Maintain a minimum speed of 15 knots above the minimum maneuvering speed at all altitudes when the airspeed is below 0.82 Mach. Severe turbulence will cause large and often rapid variations in indicated airspeed. DO NOT CHASE THE AIRSPEED.

2. Autothrottle – OPTIONAL

   Monitor autothrottle performance and disconnect if unacceptable.

3. Autopilot – OPTIONAL

   Monitor autopilot performance and disconnect if unacceptable.

4. Attitude (When flying manually)

   Maintain wings level and the desired pitch attitude. Use the attitude indicator as the primary instrument. In extreme drafts, large attitude changes may occur. DO NOT USE SUDDEN LARGE CONTROL INPUTS. After establishing the trim setting for penetration speed, DO NOT CHASE PITCH TRIM.

5. Altitude (When flying manually)

   Allow altitude to vary. Large altitude variations are possible in severe turbulence. Sacrifice altitude in order to maintain the desired attitude and airspeed. DO NOT CHASE ALTITUDE.

Traffic Alert and Collision Avoidance System (TCAS) A211696

Immediate compliance with a TCAS II/ACAS resolution advisory (RA) is necessary unless the pilot flying considers it unsafe to do so, or unless there is obvious TCAS II/ACAS system failure.

CAUTION: Once an RA has been issued, safe separation could be compromised if current vertical speed is changed, except as necessary to comply with the RA. This is because TCAS II/ACAS -to-TCAS II/ACAS coordination may be in progress with the intruder aircraft, and any change in vertical speed that does not comply with the RA may negate the effectiveness of the other aircraft's compliance with the RA.

NOTE: The consequences of not following an RA may result in additional RAs in which aural alert and visual annunciations may not agree with each other.

The pilot should not initiate evasive maneuvers using information from the traffic display only. The pilot may maneuver, based on a traffic advisory (TA) displayed on the ND, if the traffic is also visually acquired and it is considered safe to do so. However, while climbing or descending, a modest change in vertical speed based on traffic display information is not considered evasive maneuvering.

Following a TCAS II/ACAS "clear of conflict" advisory, the pilot should expeditiously return to the applicable ATC clearance unless otherwise directed by ATC.

All resolution advisory (RA) messages are inhibited at a radio altitude of less than 1100 feet above ground level (AGL) climbing, and less than 900 feet AGL descending.

All traffic advisory (TA) aural messages are inhibited at a radio altitude of less than 600 feet above ground level (AGL) climbing, and less than 400 feet AGL descending.

Weather Radar with Turbulence Display A148140

The weather mode should be used for evaluating weather conditions and should be the basis for all decisions regarding maneuvering the airplane to avoid weather.

For Rockwell Collins Weather Radar Transceivers with the additional MultiScan version 2.0 hazard detection features or the Honeywell RDR-4000 WXR System, turbulence information presented by the weather radar may be used as additional information to aid in decisions to maneuver the airplane to avoid weather related threats. For all other Weather Radar Transceivers, the turbulence detection mode has not been fully evaluated by the FAA and has only been certified on a non-interference basis.

Some systems provide variable gain in the weather and/or the turbulence modes allowing the gain to be adjusted below the calibrated level (CAL or AUTO). When below the calibrated gain level, weather returns may be shown at reduced levels or even removed from the display.

Clear air turbulence (CAT) conditions are not detectable with the weather radar system.

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Regulatory Compliance A121788

The information in this chapter and in the Airplane Flight Manual Digital Performance Information (AFM-DPI) identified by the Performance Software Serial Number(s) in the **AFM-DPI - Performance Software Serial Number (PSSN)** section is presented in compliance with the requirements of FAR Part 25, paragraph 25.1581 and FAR Part 36.

Generation of FAA-approved performance information may be accomplished by use of the FAA-approved AFM-DPI software application. Any modification to the FAA-approved AFM-DPI software application and/or subsequent alterations to the generated output will cancel the approval of the information, unless this change was approved by the appropriate airworthiness authority. This will be applicable independently of the printed approval status on the generated output.

Definitions - Airspeeds A121788

All airspeeds and Mach values in this manual are based on the primary airspeed system and assume zero instrument error.

Static source position error, ΔV_P, is the error due to the location of the static port within the airplane pressure field.

Indicated Airspeed, V_I, IAS - Airspeed reading, as displayed in the airplane.

Calibrated Airspeed, V_C, CAS - Indicated airspeed corrected for static source position error ($V_C = V_I + \Delta V_P$).

Equivalent Airspeed, V_e, EAS - Calibrated airspeed corrected for compressibility ($V_e = V_C - \Delta V_C$).

True Airspeed, V_T, TAS - Equivalent airspeed corrected for atmospheric density effects ($V_T = V_e / \sqrt{\sigma}$).

True Mach Number, M - Machmeter reading, as installed in the airplane, corrected for static source position error.

Critical Engine Failure Speed, V_{EF} - The speed at which, if the most critical engine fails, the engine failure is recognized at V_1, one second later.

Takeoff Decision Speed, V_1 - The speed from which a decision to continue the takeoff, following a failure of the critical engine at V_{EF}, results in a takeoff distance to a height of 35 feet at V_2 speed that will not exceed the usable takeoff distance and the speed at which the first action is taken to bring the airplane to a full stop that will not exceed the accelerate-stop distance available. V_1 must not be less than the minimum V_1 for control on the ground, $V_{1(MCG)}$, or greater than the rotation speed, V_R, or greater than the maximum brake energy speed, V_{MBE}.

Rotation Speed, V_R - The speed at which rotation from the three-point attitude to the takeoff attitude is initiated. The scheduled rotation speed must be equal to or greater than 1.05 V_{MCA} and V_1.

Maximum Brake Energy Speed, V_{MBE} - The highest takeoff decision speed from which the airplane may be brought to a stop without exceeding the maximum energy absorption capability of the brakes. Maximum Brake Energy Speed is compared in takeoff planning to V_1 speed.

Takeoff Safety Speed, V_2 - The target speed to be attained at the 35 foot height, assuming recognition of an engine failure at or after V_1 . This speed must be at least 1.13 times the 1G stall speed in the takeoff configuration.

Air Minimum Control Speed, V_{MCA} - The minimum flight speed at which the airplane is controllable with a maximum of 5 degrees bank when the critical engine suddenly becomes inoperative with the remaining engine at takeoff thrust.

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Minimum V_1 for Control on the Ground, $V_{1(MCG)}$ - The minimum takeoff decision speed, V_1, at which, when the critical engine suddenly becomes inoperative at V_{EF} with the remaining engine at takeoff thrust, it is possible to control the airplane with primary aerodynamic controls alone and continue the takeoff.

Minimum Control Speed for Landing, V_{MCL} - The minimum control speed with the airplane configured for approach at which the airplane is controllable with a maximum of 5 degrees bank when the critical engine suddenly becomes inoperative with the remaining engine at takeoff thrust.

Landing Speed - The minimum speed at the 50 foot height in a normal landing. This speed must be at least 1.23 times the 1G stall speed in the landing configuration.

Reference Speed, V_{REF} - This speed is equal to the landing speed in the flaps 30 landing configuration.

Design Maneuvering Speed, V_A - The speed above which full application of rudder, ailerons or elevator, or maneuvers involving angles of attack near stall, should be avoided.

Definitions - Icing Conditions A121788

Icing conditions exist when indicated in flight by the primary ice detection system, or when the OAT on the ground and for takeoff, or TAT inflight, is 10°C (50°F) or below and visible moisture in any form is present (such as clouds, fog with visibility of one mile or less, rain, snow, sleet and ice crystals).

Icing conditions also exist when the OAT on the ground and for takeoff is 10°C (50°F) or below when operating on ramps, taxiways or runways where surface snow, ice, standing water or slush may be ingested by the engines or freeze on engines, nacelles or engine sensor probes.

Definitions - Takeoff Flight Path A121788

The takeoff flight path begins 35 feet above the takeoff surface at the end of the takeoff distance and extends to a point where the airplane is at least 1500 feet above the takeoff surface and has achieved the enroute configuration and final climb speed.

Climb Gradient - The ratio, expressed as a percentage, of the change in geometric height divided by the horizontal distance traveled in a given time. Gross gradient is the actual calculated performance of the airplane under specified conditions, while Net gradient is the gross gradient reduced by an increment specified in the regulations.

Gross Height - The geometric height attained at any point in the takeoff flight path using gross climb performance. Gross height is used for calculating actual pressure altitude at which obstacle clearance procedures and wing flap retraction are initiated, and level-off height scheduled.

Net Height - The geometric height attained at any point in the takeoff flight path using net climb performance. Net height is used to determine the net flight path which must clear any obstacle by at least 35 feet to comply with the regulations.

Reference Zero - A point on the runway or clearway plane at the end of the takeoff distance and 35 feet below the flight path to which the height and distance coordinates of other points in the takeoff flight path are referred.

First Segment - Extends from the end of the takeoff distance to the point where the landing gear is assumed to be fully retracted, using takeoff thrust and takeoff flaps at a constant V_2 speed.

Second Segment - Extends from the gear up point to a gross height of at least 400 feet, using takeoff thrust and takeoff flaps at a constant V_2 speed.

Third Segment - The horizontal distance required to accelerate, at constant altitude using takeoff thrust, to the final climb speed while retracting flaps in accordance with the recommended speed schedule.

Maximum Level-Off Height - The maximum height at which the third segment can be completed before the time limit on the use of takeoff thrust expires.

Final Takeoff Segment - Extends from the end of the third segment to a gross height of at least 1500 feet, with flaps up, maximum continuous thrust and at final climb speed.

Definitions - Takeoff Path A121788

The takeoff path assumes failure of the most critical engine at V_{EF} and extends from a standing start to a point where the airplane is at least 1500 feet above the takeoff surface and has achieved the enroute configuration and final climb speed.

The takeoff path is divided into segments representing distinct changes in airplane configuration, airspeed, and engine thrust as defined below. Some of these definitions are abbreviated versions of those appearing in FAR Parts 1 and 25; the appropriate regulations should be consulted for complete details.

Clearway - An obstacle-free area beyond the takeoff runway which can be used as a part of the takeoff distance available.

Stopway - An area beyond the takeoff runway capable of supporting the airplane in an aborted takeoff which can be used as part of the accelerate-stop distance available. To be applicable for use with this manual, the surface characteristics of the stopway must not differ substantially from those of the runway.

Takeoff Distance Required - The greater of: (1) the distance to takeoff and climb to a height of 35 feet with a failure of the critical engine at V_{EF}, or (2) 115% of the distance to takeoff and climb to a height of 35 feet with all engines operating.

Takeoff Run Required - The greater of: (1) the distance to takeoff and climb to a point equidistant between lift off and the 35 foot height point with a failure of the critical engine at V_{EF}, or (2) 115% of the distance to takeoff and climb to a point equidistant between lift off and the 35 foot height point with all engines operating.

Accelerate-Stop Distance Required - The greater of: (1) the sum of distances required to accelerate with all engines operating and come to a complete stop assuming a critical engine failure at V_{EF} or (2) the sum of distances required to accelerate, with all engines operating, to V_1 and come to a complete stop with all engines still operating.

Definitions - Temperature A121788

ISA - International Standard Atmosphere, as accepted by the International Civil Aviation Organization.

OAT - Outside Air Temperature - the free air static (ambient) temperature.

SAT - Static Air Temperature - outside air (ambient) temperature as computed from TAT.

TAT - Total Air Temperature - static air temperature plus adiabatic compression (ram) rise as indicated on the Total Air Temperature indicator.

Definitions - Wind Velocity A121788

The actual wind velocity at a 10 meter (32.8 foot) height reported from the tower and corrected to a headwind or tailwind component parallel to the flight path.

Standard Performance Conditions A121788

All performance is based on the following:

1. Approved engine thrust ratings less installation, airbleed, and accessory losses.

2. Trailing edge flap positions as follows:

Trailing Edge Flaps	
Takeoff	5, 15, 20
Enroute	0
Approach	20
Landing	25, 30
Autoland (all engines)	30
Autoland (one engine inoperative)	20, 30

3. Leading edge devices in the appropriate position for trailing edge flap position.

4. Full temperature accountability within the operational limits, except for landing distance, which is based on standard day temperatures.

5. Wind corrections are calculated using not more than 50% of actual headwinds, or not less than 150% of actual tailwinds, in compliance with relevant operating regulations unless otherwise noted. Tower winds are assumed to be measured at 10 meters (32.8 feet).

6. Humidity has no appreciable effect on the thrust of the engines; therefore, it has not been considered in the performance data.

Performance Configuration A147700

The airplane configuration associated with the performance data in this manual and the AFM-DPI is shown below:

	Thrust	Flaps	Gear
Takeoff	Takeoff on all operating engines.	20 or 15 or 5	Down
1st Segment Climb	Takeoff on operating engine.	20 or 15 or 5	Down
2nd Segment Climb	Same as 1st segment.	20 or 15 or 5	Up
3rd Segment	Same as 1st segment.	20 or 15 or 5	Up
Final Takeoff Climb	Maximum continuous on operating engine.	Up	Up
Enroute Climb	Maximum continuous on operating engine.	Up	Up
Approach Climb	Go-around on operating engine.	20	Up
Landing Climb	Maximum available in 8 seconds on all engines.	30 or 25	Down
Landing	Idle on all engines at touchdown.	30 or 25	Down

Takeoff performance calculated using AFM-DPI for ECS on is based on a normal ECS configuration (2 A/C packs on).

Scheduled landing performance assumes that the automatic speed brake system is operative, except when manual speed brakes are selected.

Performance is applicable to both APU on and off.

Continued on next page

Section Performance Configuration, continued from previous page

Airplane Flight Manual Digital Performance Information (AFM-DPI) A121788

The following is a summary description of the AFM-DPI software denoted by Performance Software Serial Number(s) below. This software is only applicable to the airplane serial numbers indicated. Refer to the Airplane Serial Number & Appendix Effectivity section of this manual for a complete listing of all airplane serial numbers for which this flight manual is approved.

AFM-DPI - Performance Software Serial Number (PSSN) A144760

All of the following Performance Software Serial Numbers are applicable to model 777-200 airplanes based on FAA certification and operated with Category A brakes and Pratt & Whitney engines.

Software Identification

D631W001.F00.P043
D631W001.F00.P039

Engine Designation	Performance Software Serial No.	Software Version No.	Database Version No.	Key Function
PW4090	D631W001.F00.P043	13.02	005	Vloc
	D631W001.F00.P039	8.03	003	N/A

AFM-DPI - Airplane Serial Number Applicability A144760

Performance Software Serial Number	Airplane Serial Numbers	AFM-DPI - Notes
D631W001.F00.P043	All ASNs contained within the **Airplane Serial Number & Appendix Effectivity** section.	1
D631W001.F00.P039		N/A

AFM-DPI - Authorized Performance Capability A180282

	Authorized Airplane Serial Numbers
	All Applicable PSSNs
Landing Gear Extended	All
Alternate EEC Mode	All
Ten Minute Takeoff Thrust	None
Forward C.G. Limit - Takeoff only	30859
Forward C.G. Limit 2 - Takeoff only (default)	29174, 29175, 30860, 30861, 30862, 35525, 40198, 40199
Alt. Forward C.G. Limit - Takeoff only	None
Alt. Forward C.G. Limit 2 - Takeoff only	None

AFM-DPI - Notes A144760

1. Applicable upon incorporation of AIMS Blockpoint V14 or later and Boeing Service Bulletin 777-27-0079 or 777-27-0080; or production equivalent.

AFM-DPI - Release Notes A121788

Following the installation of AFM-DPI, the release information can be found at C:\AFMDPI\DOC. (Note: If the user specified a unique directory other than the default "AFMDPI" during installation, the release files will be in the DOC folder under the unique user specified directory.)

Software release notes are in the file: V0"XXX".DOC where "XXX" is the software version number.

Database release notes are located in the file: "PSSN".DOC where "PSSN" is the performance software serial number.

Automatic Wheel Brakes A121788

Stopping distances with automatic wheel brakes are provided in AFM-DPI and are only for guidance information in the selection of the most desirable autobrake setting for the field length available. They are not to be used to determine required landing field length.

The automatic wheel brake system is designed to improve the consistency and smoothness of the landing roll-out by modulating brake pressure to achieve a selected deceleration rate. Use of the system is optional and does not relieve the pilot of the responsibility to assure a safe stop within the available runway length.

The automatic wheel brake system is triggered at touchdown by landing gear truck tilt and main gear wheel spin-up. Therefore, a delay in lowering the nose gear will not delay application of the brakes. However, to provide a controlled rate of de-rotation when the MAX AUTO setting is selected, AUTO 4 will be commanded until the pitch attitude decreases to 1 degree or less. Maximum pedal braking achieves a higher deceleration rate (shorter stopping distance) than the MAX AUTO setting, provided sufficient runway friction is available. The use of reverse thrust is demonstrated to have no adverse effects on autobrake stopping distances.

The stopping distances given in AFM-DPI are based on demonstrated deceleration values using automatic speed brakes and are valid for all flap settings. The stopping distances are also valid with or without reverse thrust depending on the runway surface conditions.

Stopping distances depend on the friction characteristics, or slipperiness, of the particular runway. The stopping distance that is achieved for a given setting will be the longer of (1) the distance produced by the fixed deceleration of the setting or (2) the distance produced by the runway friction available. A higher setting (MAX AUTO rather than 4, or 4 rather than 3) will produce shorter stopping distances if friction characteristics are such to permit the higher deceleration. The use of reverse thrust will decrease runway stopping distance when the deceleration is limited by runway friction characteristics. Extremely slippery conditions can result in longer distances than indicated.

Buffet Onset Characteristics A121788

Buffet onset occurs when the airflow starts to separate from the wing. This characteristic is a function of angle of attack and Mach number.

From the Cruise Maneuverability chart it is possible to determine the altitude, low-speed, high-speed, and maneuvering margins before the buffet onset occurs.

Engine - AFM-DPI Selection of Anti-Ice A121788

To ensure that the appropriate anti-ice corrections are applied to engine power settings when using AFM-DPI, refer to the following table. The correct selection of anti-ice in AFM-DPI is determined from ambient temperature (T_{amb}) and the engine and wing anti-ice configuration as shown below.

AFM-DPI Selection Of Anti-Ice			
T_{amb} °F(°C)	**Engine Anti-Ice**	**Wing Anti-Ice**	**AFM-DPI Selection**
All Temps.	Off	Off	Off
All Temps.	Auto	Off	Engine Auto
All Temps.	Auto	Auto	Engine & Wing Auto
Temp ≤ 50(10)	On	Off	Engine
Temp ≤ 50(10)	On	On	Engine & Wing

Engine - Go-Around Power Setting A121788

Go-around settings can be determined by use of the approved AFM-DPI software application.

Engine - Inflight Power Setting A121788

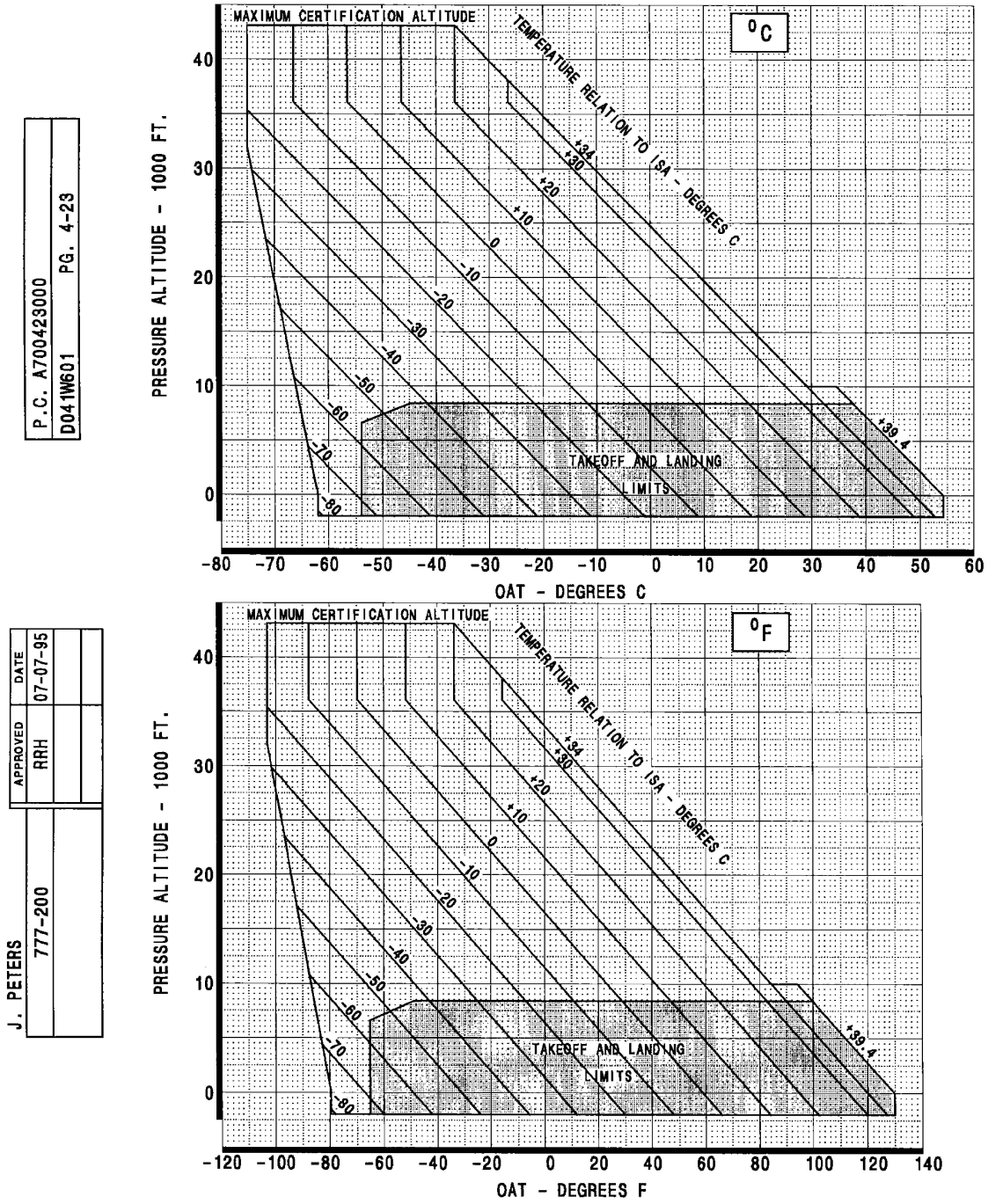
Inflight settings can be determined by use of the approved AFM-DPI software application.

Engine - Takeoff Power Setting A121788

Takeoff power setting must be set at an airplane velocity between 40 and 80 knots. Takeoff settings can be determined by use of the approved AFM-DPI software application.

Environmental Envelope A144760

ISA +34°C from -2000 feet to 36,089 feet only.



Flap Retraction Speed Schedule A121788

Maximum level-off heights, Third Segment distances and Final Segment climb performance are based upon retracting the wing flaps during Third Segment acceleration using the schedule below. This schedule is recommended for all flap retraction operations.

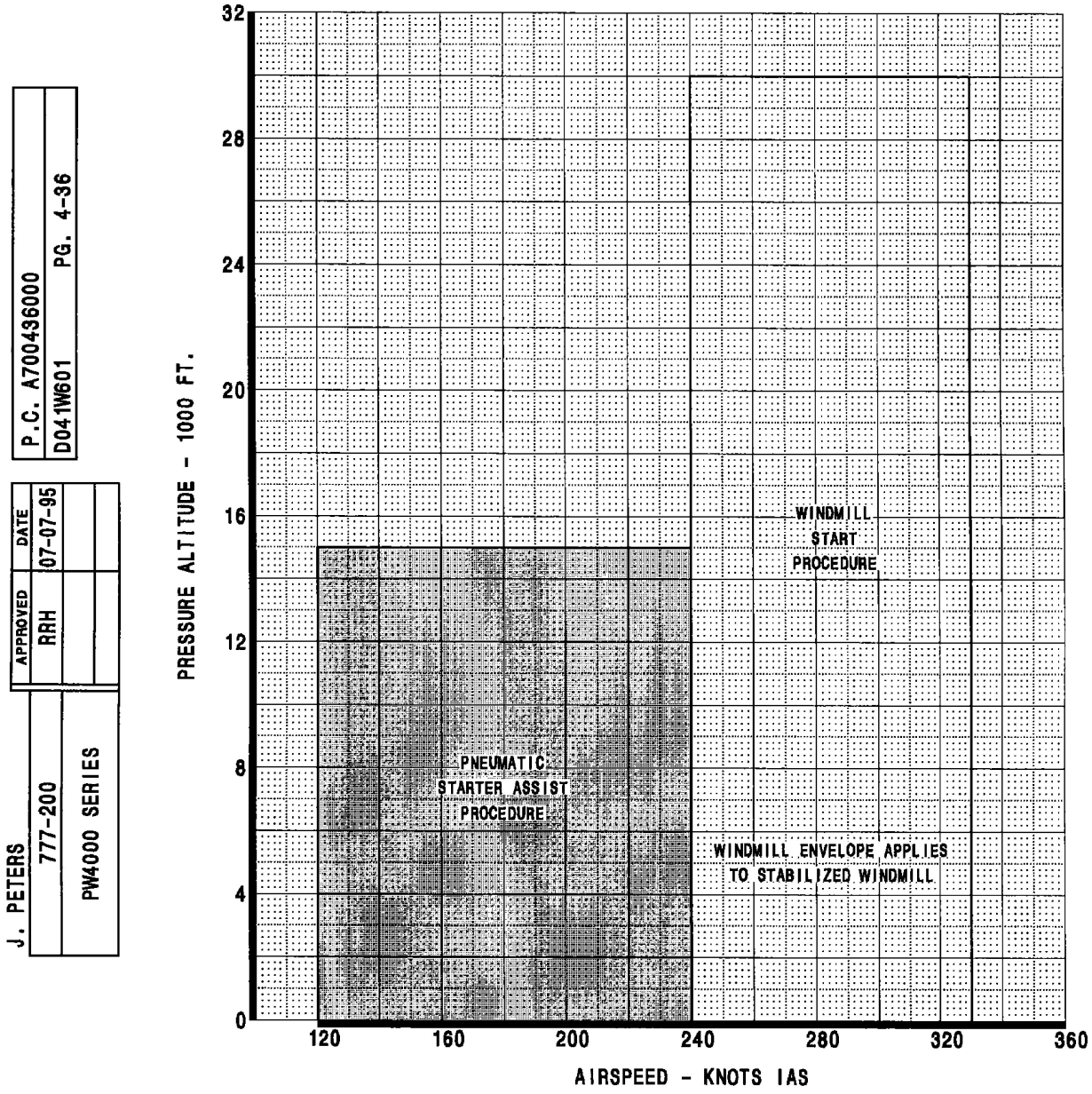
During acceleration, select flap positions at the following initiation speeds:

Flap Position	Initiation Speed (knots)	Select Flap Position
20/15	V_{REF} + 20	5
5	V_{REF} + 40	1
1	V_{REF} + 60	0
Final Segment Climb Speed: V_{REF} + 80 Knots.		

When flaps are being retracted at a constant altitude, begin climbing when V_{REF} + 80 knots is achieved, maintaining takeoff thrust setting until flaps are completely retracted.

Inflight Restart Envelope A144760

- Successful starts are not assured outside envelope.
- Windmill start procedure envelope applies to stabilized windmill.



Maximum Crosswind A121788

The maximum demonstrated crosswind component for takeoff and landing is 38 knots reported wind at 10 meter height. This component is not considered to be limiting on a dry runway with all engines operating.

Maximum Quick Turnaround Weight A121788

Use one of the following methods:

1. After landing at weights exceeding those determined from the maximum quick turnaround option in AFM-DPI, wait at least 65 minutes after landing and check that wheel thermal plugs have not melted before making a subsequent takeoff.

2. No sooner than 10 and no later than 15 minutes after parking, check for the BRAKE TEMP advisory message on EICAS.

   If the EICAS message is not displayed:

   No waiting period is required.

   If the EICAS message is displayed:

   Do not dispatch until at least 65 minutes after landing or until the Brake Temperature Monitoring System (BTMS) readings on the Landing Gear Synoptic Display are all 3.0 or lower. Check that wheel thermal plugs have not melted before making a subsequent takeoff.

Note: If any brake temperature display digit is blank or the BRAKE TEMP SYS status message is displayed, the Maximum Quick Turnaround Weight method, Method 1, must be used.

Noise Characteristics A180423

Configuration

Engine:	PW4090 at PW4090 or PW4090-3 Thrust Rating
Model:	777-200
Nacelle Treatment:	Basic Configuration Including Inlet and Fan Duct Treatments
Applicability:	(1) Airplanes identified as 777-200 on the MCDU IDENT page.
	(2) Airplanes identified as 777-200.1 or 777-200.3 on the MCDU IDENT page, that have coverage in Boeing Service Bulletin 777-27-0079 or 777-27-0080, but prior to incorporation of those bulletins.

Certificated Noise Levels

The following noise levels were established using test data obtained and analyzed under procedures of 14 CFR Part 36. This aircraft complies with 14 CFR Part 36, Stage 3 requirements.

Supplemental ICAO Annex 16, Chapter 3 Noise Level Information

The test and analysis procedures used to obtain the 14 CFR Part 36, Stage 3 noise levels are essentially equivalent to those required by the International Civil Aviation Organization (ICAO) in Annex 16, Volume 1, Chapter 3. The ICAO Annex 16, Chapter 3 data is applicable only after approval by the proper authority of airplane registry, including approval of the equivalent procedures used to demonstrate compliance with 14 CFR Part 36 noise standards.

Noise Characteristics Applicability

No determination has been made by the Federal Aviation Administration that the noise levels of this aircraft are or should be acceptable or unacceptable for operation at, into, or out of, any airport.

Noise levels are determined by entering the graphs at the maximum weights defined under Certificate Limitations in the Airplane Flight Manual.

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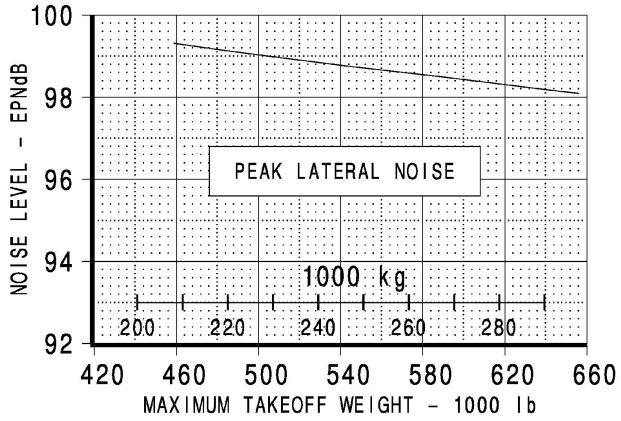

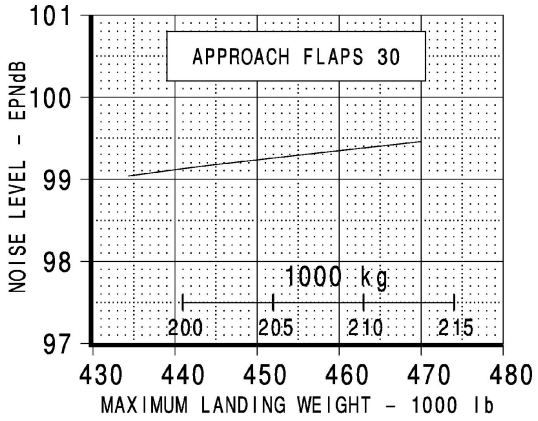

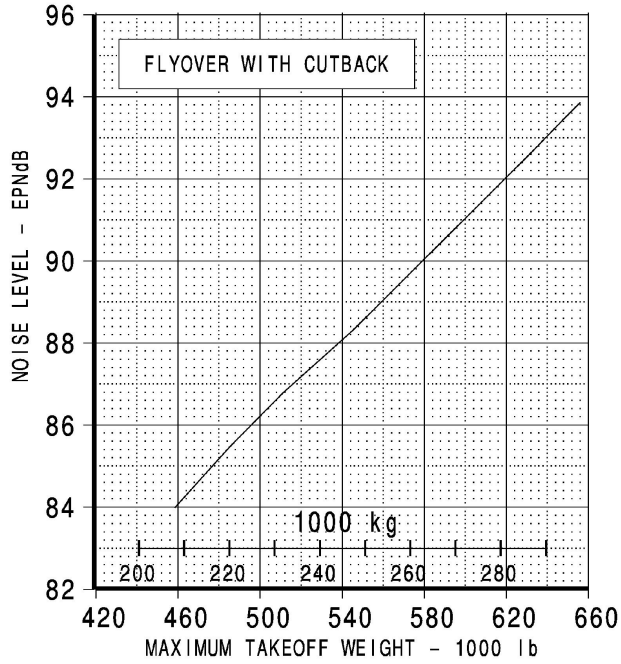

Noise Configuration Code:
772.R3.PW4090

Noise Characteristics A180423

Configuration

Engines: PW4090 at PW4090 or PW4090-3 Thrust Rating
Model: 777-200
Nacelle Treatment: Basic Configuration Including Inlet and Fan Duct Treatments
Applicability: Airplanes identified as model 777-200.1 or 777.200.3 on the MCDU IDENT page that have incorporated Boeing Service Bulletin 777-27-0079 or 777-27-0080, or production equivalent.

Certificated Noise Levels

The following noise levels were established using test data obtained and analyzed under procedures of 14 CFR Part 36. This aircraft complies with 14 CFR Part 36, Stage 3 requirements.

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Section Noise Characteristics, continued from previous page A180423

Supplemental ICAO Annex 16, Chapter 3 Noise Level Information

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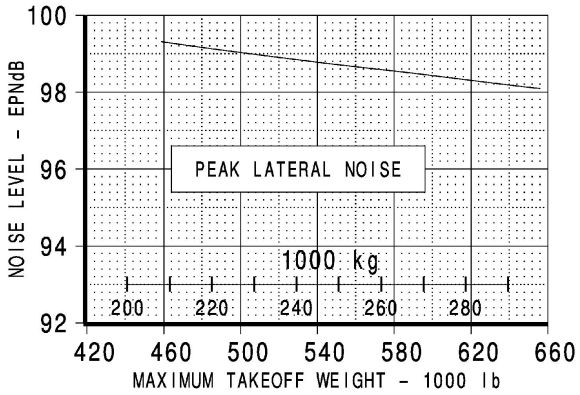
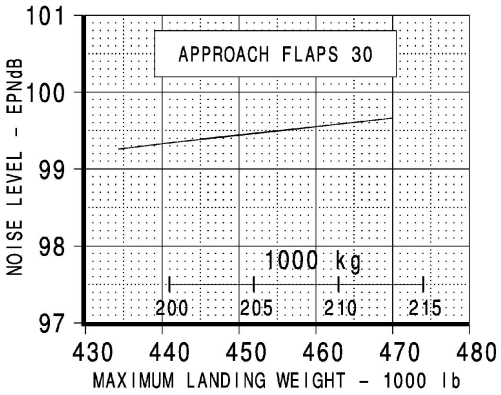
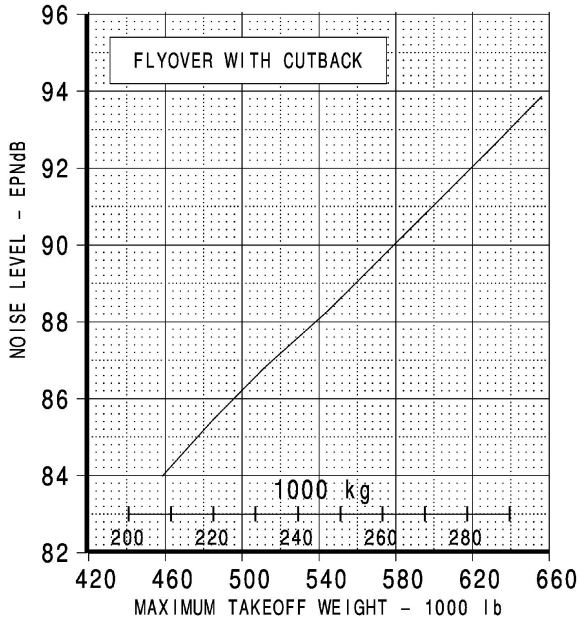






Noise Configuration Code:
772.R3.PW4090.ILAM

Normal Cruise Altitude Limits Due to Buffet

A144760

NORMAL CRUISE ALTITUDE LIMITS DUE TO BUFFET

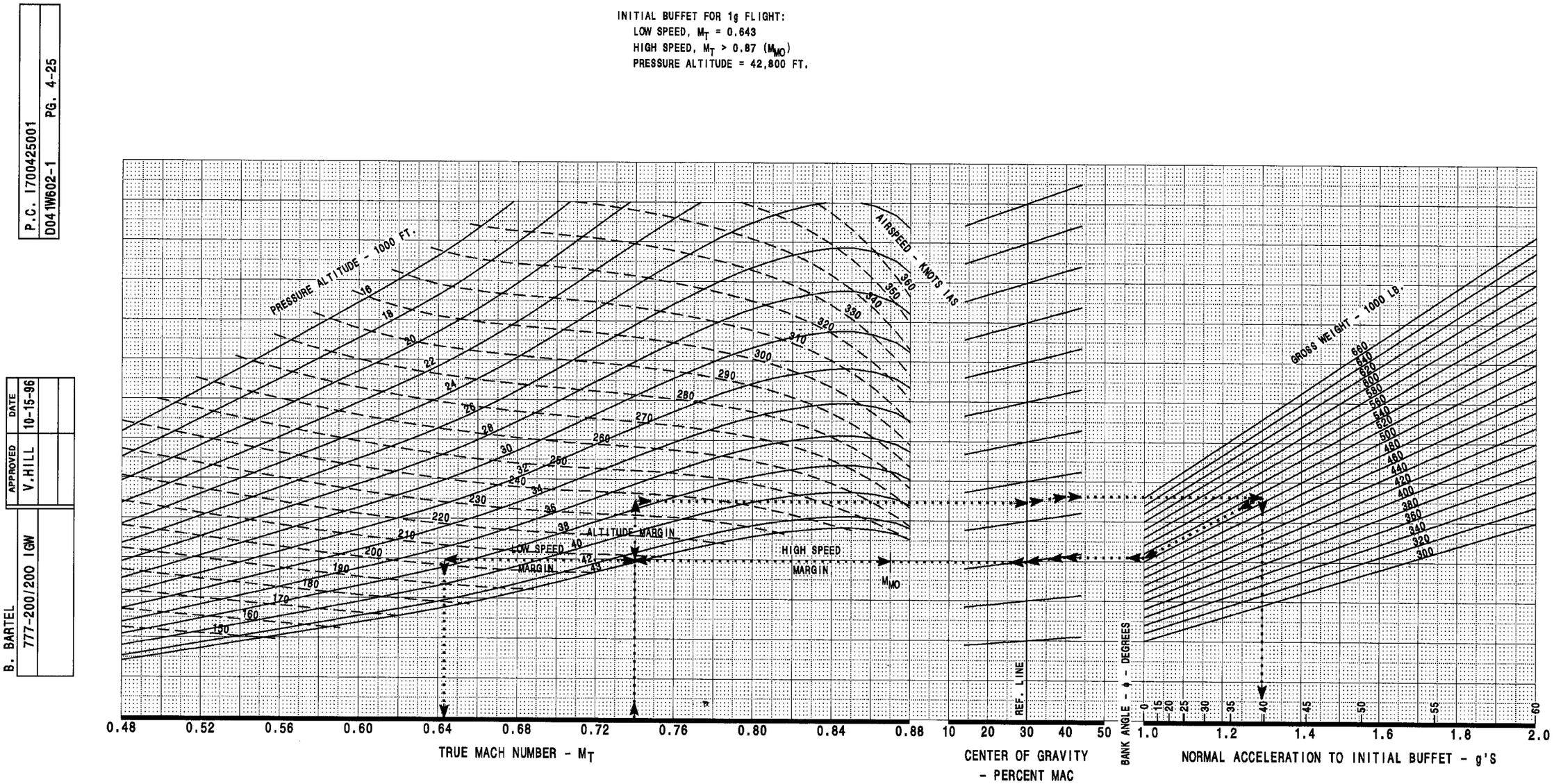
FLAPS AND GEAR UP

EXAMPLE:

TRUE MACH NUMBER , M_T = 0.74
PRESSURE ALTITUDE = 37,200 FT.
CENTER OF GRAVITY = 40 PERCENT MAC
GROSS WEIGHT = 510,000 LB.

MANEUVER MARGIN TO INITIAL BUFFET:
NORMAL ACCELERATION = 1.3 g
BANK ANGLE, ϕ = 39.7 DEGREES

INITIAL BUFFET FOR 1g FLIGHT:
LOW SPEED, M_T = 0.643
HIGH SPEED, M_T > 0.87 (M_{MO})
PRESSURE ALTITUDE = 42,800 FT.



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Performance Conditions and Procedures A121788

The conditions and procedures used in establishing the performance data in this manual are presented for each phase of operation. Airplane configuration and engine thrust settings are shown under Performance Configuration. These procedures include only the essential steps which affect airplane performance.

Performance Conditions and Procedures - Takeoff A121788

Conditions

Takeoff field length performance accounts for the greater of: (1) 115 percent of the all-engines operating distance, or (2) the engine inoperative distance, considering a failure of the critical engine at VEF. These distances are based on a smooth, dry, hard-surfaced runway.

Procedures

Performance data is based on a static takeoff power setting procedure. Operationally, a rolling takeoff procedure is recommended. Analysis has shown that the change in field length due to the rolling takeoff procedure is negligible (less than 50 feet) when compared to the standing takeoff.

The recommended power setting procedure is as follows: Set 1.05 EPR prior to brake release or as the airplane is aligned with the runway. As the airplane accelerates, advance the thrust levers to the takeoff EPR setting. Readjust thrust levers, if necessary, prior to 80 knots to obtain target EPR. Do not make further adjustments after 80 knots.

A speed not less than V_2 is assumed to have been achieved by a height of 35 feet. Initiation of landing gear retraction is assumed to occur after a positive rate of climb has been established.

Make a smooth positive rotation to the initial climb attitude. Make minor attitude variations after liftoff to achieve the initial climb speed.

Performance Conditions and Procedures - Rejected Takeoff A121788

Conditions

Calculated accelerate-stop distances account for demonstrated recognition and reaction times, plus additional time delays.

Distances are valid with autobrakes set to RTO. With autobrakes either disarmed or off, maximum manual braking is assumed.

Reverse thrust was not used in calculating these distances.

Procedures

Initiate rejected takeoffs at or prior to V_1 using the following procedures:

Simultaneously close thrust levers and apply maximum manual braking or verify operation of RTO autobrakes. Raise the speedbrakes.

Performance Conditions and Procedures - Climb-Out A121788

(1 or 2 Engines)

Conditions

Climb gradient and obstacle clearance flight path performance are based on failure of the most critical engine at VEF.

Procedures

Maintain takeoff flap setting and a speed not less than V_2 to the height selected for initiation of flap retraction.

Retract flaps according to the flap retraction speed schedule, in this section.

Follow enroute procedures after all takeoff flight path obstacles have been cleared or after climbing to at least 1500 feet above runway elevation.

Performance Conditions and Procedures - Obstacle Clearance A121788

Procedures

If engine failure occurs and the takeoff weight is obstacle limited, maintain V_2 or the speed at engine failure (up to V_2 + 15 knots maximum) up to the gross height required for obstacle clearance.

When the height selected for initiation of flap retraction is reached, initiate flap retraction and accelerate to final takeoff climb speed while maintaining constant altitude and initial takeoff thrust setting.

Continue final takeoff climb to 1500 feet above runway elevation, or to the minimum gross height required for obstacle clearance, at final takeoff climb speed and maximum continuous thrust.

Performance Conditions and Procedures - Landing Field Length A121788

Conditions

All landing field lengths shown in the AFM-DPI software are based on standard day temperatures on a smooth, level, hard-surfaced runway. Dry non-autoland field lengths are maximum performance landing distances, from a 50 foot height at landing speed, divided by a factor of 0.6. Scheduled wet landing field lengths are determined by multiplying the scheduled dry landing field lengths by a factor of 1.15. Reverse thrust was not used in establishing these distances.

Procedures

Make final approach and landing with landing gear down, flaps in landing position and thrust levers reduced to idle on all engines before touchdown.

When landing with automatic speed brakes armed, the speed brakes are automatically deployed on touchdown; apply maximum wheel braking immediately.

When landing with manual speed brakes, apply full speed brakes and maximum wheel braking 2 seconds or less after touchdown.

When landing, apply reverse thrust as necessary.

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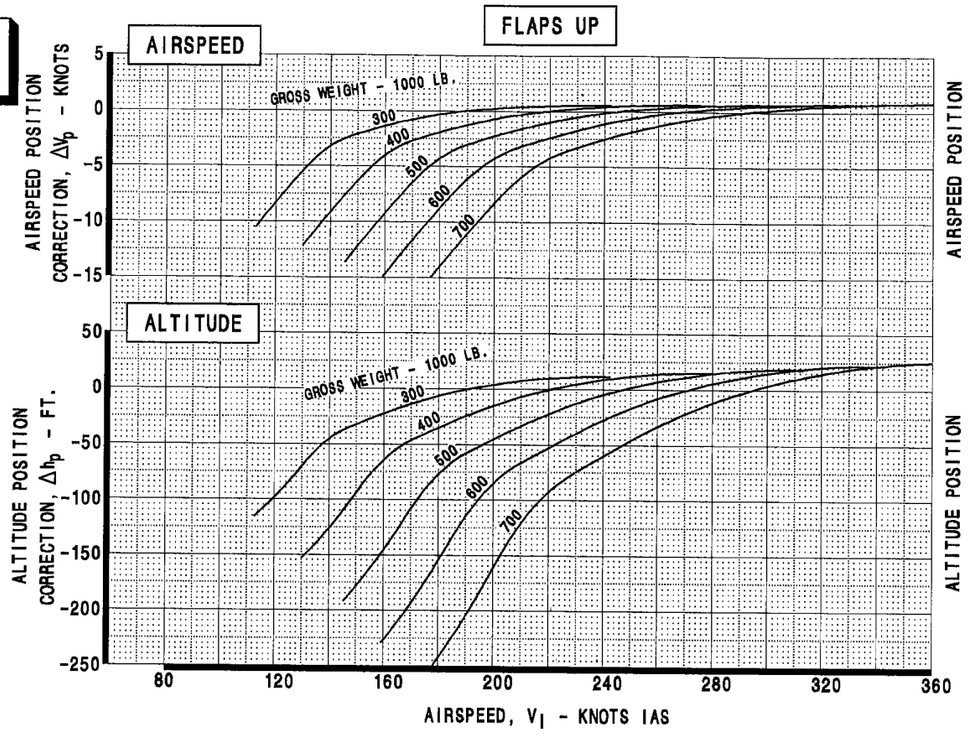
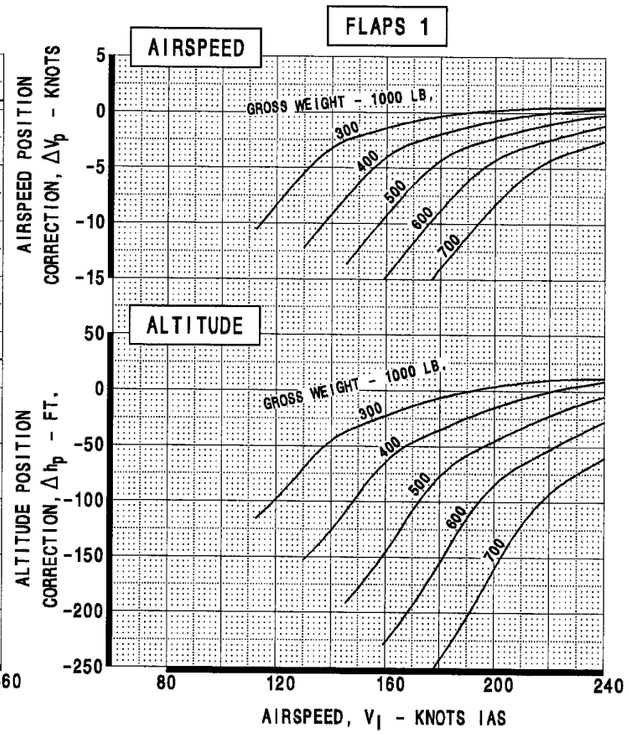
Position Corrections

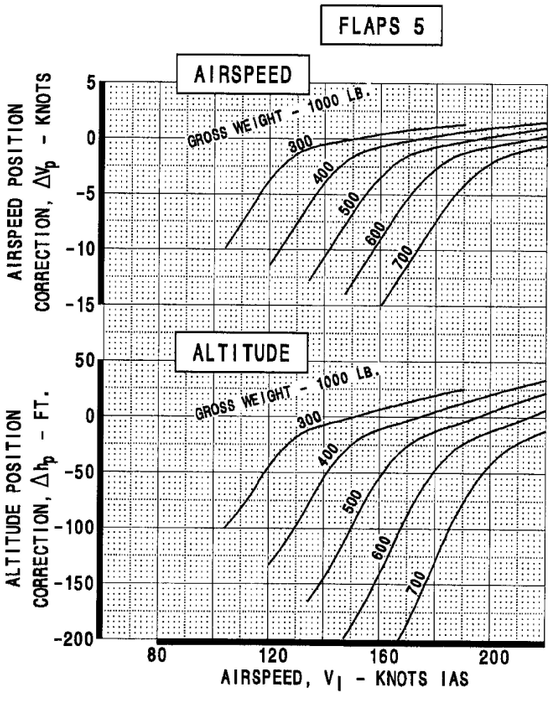
A144760

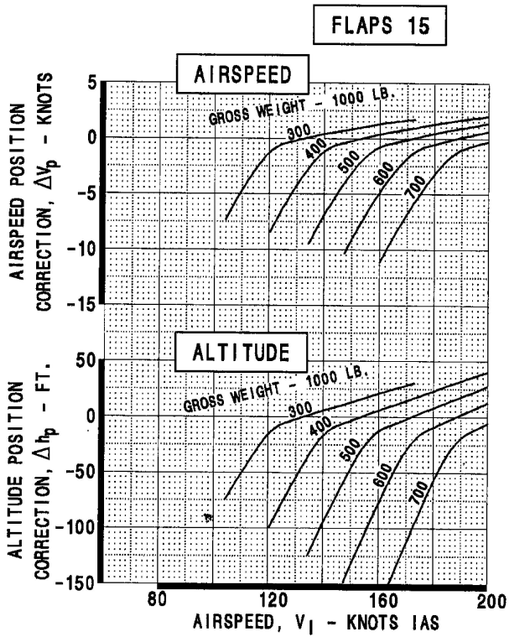
POSITION CORRECTIONS
STANDBY SYSTEM

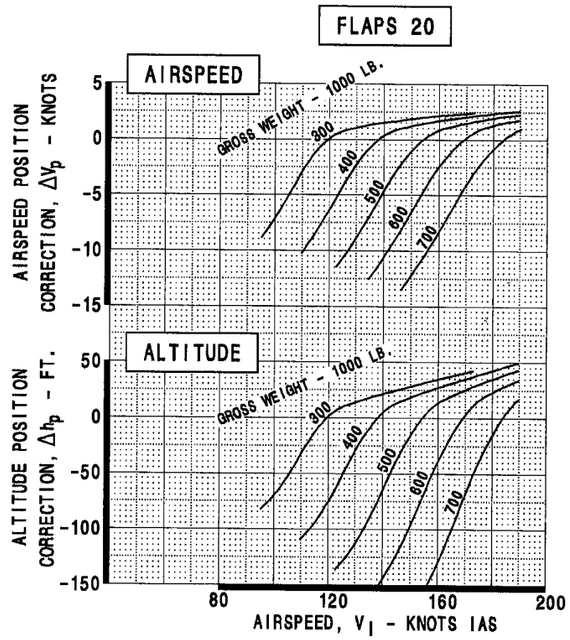
- CALIBRATED AIRSPEED, $V_C = V_I + \Delta V_p$
- TRUE PRESSURE ALTITUDE, $h_p = h_I + \Delta h_p$











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777-200/200 IGW

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Section Position Corrections, continued from previous page

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777-200/200 IGW

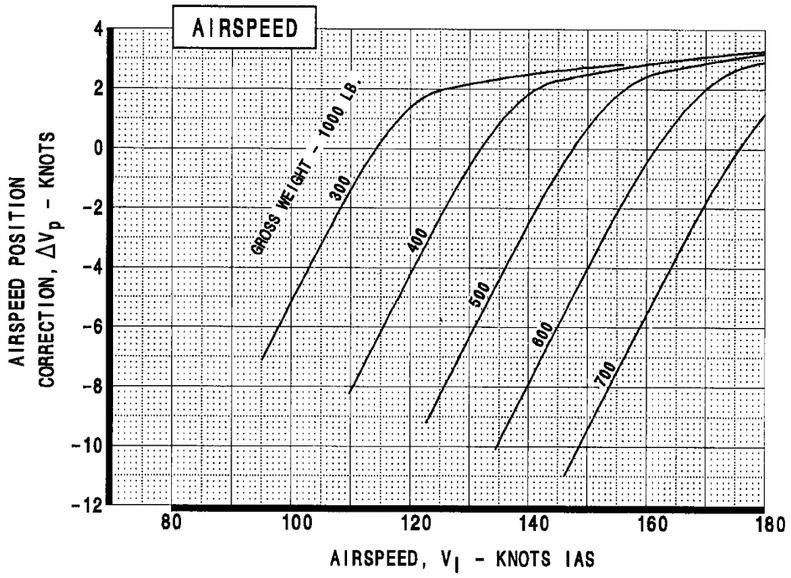
POSITION CORRECTIONS

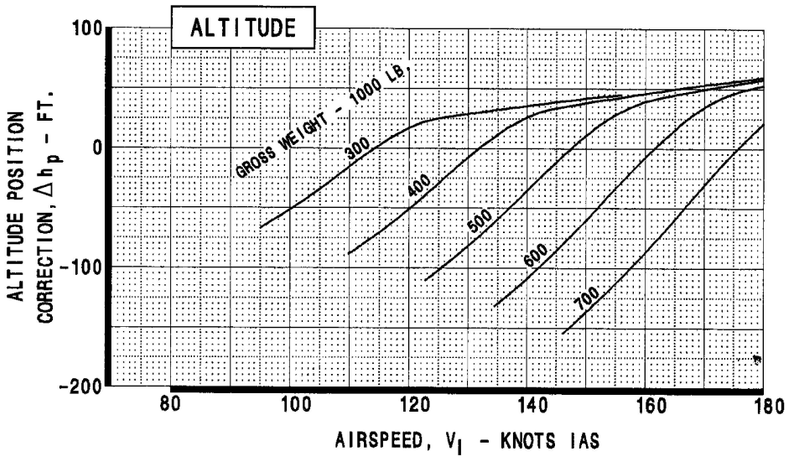
STANDBY SYSTEM

GEAR DOWN

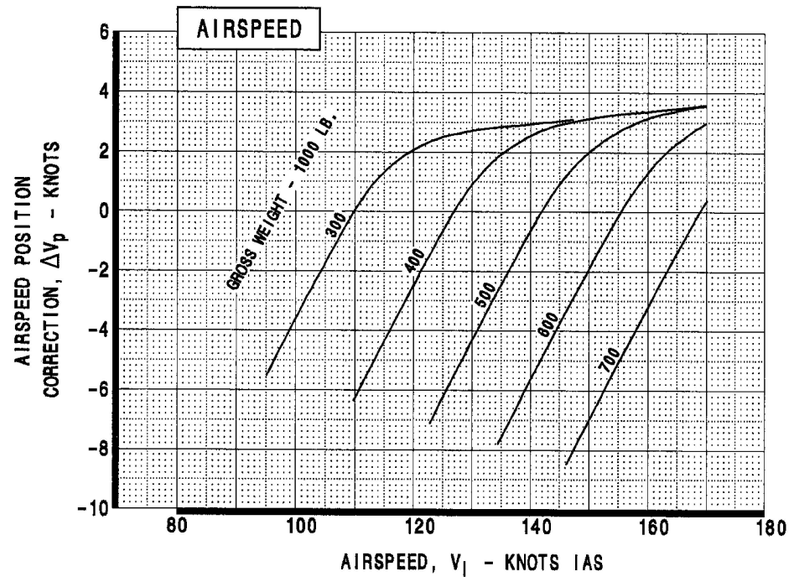
- CALIBRATED AIRSPEED, $V_C = V_I + \Delta V_p$
- TRUE PRESSURE ALTITUDE, $h_p = h_I + \Delta h_p$

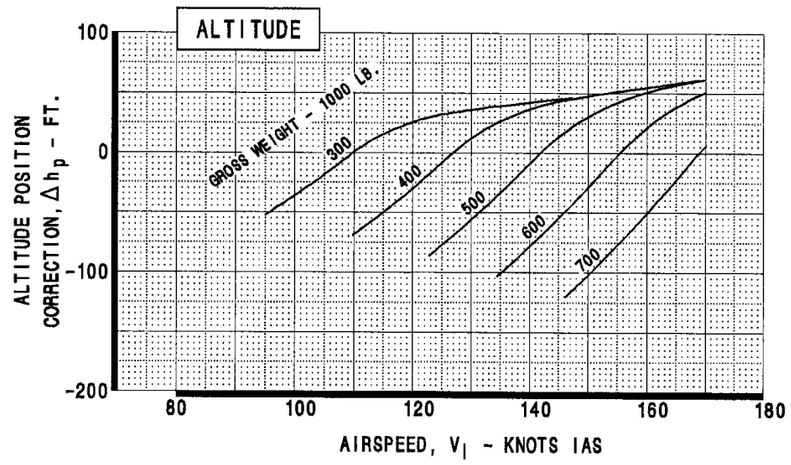
FLAPS 25





FLAPS 30





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Recommended Takeoff Stabilizer Setting A144760

Engine Rating Guide

Use the recommended takeoff stabilizer setting chart on the following pages appropriate to the engine thrust rating and derate selection.

For assumed temperature derate, use charts appropriate to full rated thrust or selected pushbutton derate only.

Applicable Recommended Takeoff Stabilizer Setting Chart	Thrust Rating
Chart A	PW4074 at 16% through 30% derate PW4077 at 16% through 30% derate
Chart B	PW4074 at full thrust through 15% derate PW4077 at full thrust through 15% derate PW4084D at 16% through 30% derate PW4090 at 16% through 30% derate PW4090-3 at 16% through 30% derate
Chart C	PW4084D at full thrust through 15% derate PW4090 at full thrust through 15% derate PW4090-3 at full thrust through 15% derate

Continued on next page

Chart A

- Observe center of gravity limits.
- Use linear interpolation and round to nearest 1/4 unit.

P.C. D700424A01 PG. 4-24
D041W602

APPROVED PJM DATE 09-29-98

J. BENDORF 777-200/200 IGW

FLAPS 5

GROSS WEIGHT - 1000 LB.	CENTER OF GRAVITY - PERCENT MAC							
	14.0	16.0	19.0	24.0	29.0	34.0	39.0	44.0
	STABILIZER TRIM UNITS							
300	7 1/2	7	6 1/2	5 1/4	4 1/4	3	2	1 1/4
350	9 1/2	9	8	6 1/2	5	3 1/2	2 1/2	1 1/2
400	9 1/2	9 1/2	8 3/4	7 1/4	5 1/2	4	3	1 3/4
450	9 1/2	9 1/2	8 3/4	7 1/4	6	4 1/2	3 1/4	2
500	9 1/2	9 1/2	8 3/4	7 1/2	6 1/4	4 3/4	3 1/2	2 1/4
535	9 1/2	9 1/2	8 3/4	7 1/2	6 1/4	5	3 3/4	2 1/2
550	9 1/2	9 1/2	8 3/4	7 1/2	6 1/4	5	3 3/4	2 1/2
600	9 1/2	9 1/2	8 3/4	7 1/2	6 1/2	5 1/4	4	2 1/2
640	9 1/2	9 1/2	8 3/4	7 3/4	6 1/2	5 1/2	4	2 3/4
650	9 1/2	9 1/2	8 3/4	7 3/4	6 1/2	5 1/2	-	-
670	9 1/2	9 1/2	8 3/4	7 3/4	6 1/2	5 1/2	-	-

FLAPS 15 AND 20

GROSS WEIGHT - 1000 LB.	CENTER OF GRAVITY - PERCENT MAC							
	14.0	16.0	19.0	24.0	29.0	34.0	39.0	44.0
	STABILIZER TRIM UNITS							
300	8 1/2	8	7 1/4	6	4 1/2	3 1/4	2 1/4	1
350	11	10 1/4	9	7 1/4	5 1/2	3 3/4	2 1/2	1 1/2
400	11 1/4	10 1/2	9 1/2	7 3/4	6	4 1/4	3	1 3/4
450	11 1/4	10 1/2	9 1/2	7 3/4	6 1/4	4 1/2	3 1/4	2
500	11	10 1/2	9 1/2	8	6 1/4	4 3/4	3 1/2	2 1/4
535	11	10 1/4	9 1/2	8	6 1/2	5	3 3/4	2 1/4
550	11	10 1/4	9 1/2	8	6 1/2	5	3 3/4	2 1/2
600	10 3/4	10 1/4	9 1/2	8	6 1/2	5	3 3/4	2 1/2
640	10 3/4	10 1/4	9 1/4	8	6 1/2	5 1/4	4	2 1/2
650	10 3/4	10 1/4	9 1/4	8	6 1/2	5 1/4	-	-
670	10 3/4	10 1/4	9 1/4	8	6 1/2	5 1/4	-	-

Continued on next page

Chart B

- Observe center of gravity limits.
- Use linear interpolation and round to nearest 1/4 unit.

P.C. D700424B01 PG. 4-24
D041W602

APPROVED PJM DATE 09-29-98

J. BENDORF 777-200/200 IGW

GROSS WEIGHT - 1000 LB.	CENTER OF GRAVITY - PERCENT MAC							
	14.0	16.0	19.0	24.0	29.0	34.0	39.0	44.0
	STABILIZER TRIM UNITS							
300	7	6 1/2	6	4 3/4	3 3/4	2 1/2	1 1/2	1
350	9	8 1/2	7 1/2	6	4 1/2	3	2	1
400	9	9	8 1/4	6 3/4	5 1/4	3 1/2	2 1/2	1 1/4
450	9	9	8 1/4	6 3/4	5 1/2	4	2 3/4	1 1/2
500	9	9	8 1/4	7	5 3/4	4 1/4	3	1 3/4
535	9	9	8 1/4	7	5 3/4	4 1/2	3 1/4	2
550	9	9	8 1/4	7	5 3/4	4 1/2	3 1/4	2
600	9	9	8 1/4	7	6	4 3/4	3 1/2	2
640	9	9	8 1/4	7 1/4	6	5	3 1/2	2 1/4
650	9	9	8 1/4	7 1/4	6	5	-	-
670	9	9	8 1/4	7 1/4	6	5	-	-

FLAPS 15 AND 20

GROSS WEIGHT - 1000 LB.	CENTER OF GRAVITY - PERCENT MAC							
	14.0	16.0	19.0	24.0	29.0	34.0	39.0	44.0
	STABILIZER TRIM UNITS							
300	8	7 1/2	6 3/4	5 1/4	4	2 1/2	1 1/2	1
350	10	9 1/4	8 1/4	6 1/2	4 3/4	3	2	1
400	10 3/4	10	9	7 1/4	5 1/2	3 1/2	2 1/2	1 1/4
450	10 1/2	10	9	7 1/4	5 3/4	4	2 3/4	1 1/2
500	10 1/2	10	9	7 1/2	6	4 1/4	3	1 3/4
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550	10 1/2	10	9	7 1/2	6	4 1/2	3 1/4	2
600	10 1/2	9 3/4	9	7 1/2	6	4 3/4	3 1/2	2 1/4
640	10 1/4	9 3/4	9	7 1/2	6 1/4	5	3 3/4	2 1/4
650	10 1/4	9 3/4	9	7 1/2	6 1/4	5	-	-
670	10 1/4	9 3/4	9	7 1/2	6 1/4	5 1/4	-	-

Continued on next page

Chart C

- Observe center of gravity limits.
- Use linear interpolation and round to nearest 1/4 unit.

P.C. D700424C01 D041W602 PG. 4-24

APPROVED PJM DATE 09-29-98

J. BENDORF 777-200/200 IGW

FLAPS 5

GROSS WEIGHT - 1000 LB.	CENTER OF GRAVITY - PERCENT MAC									
	14.0	15.0	16.0	24.0	29.0	34.0	39.0	41.0	43.0	44.0
	STABILIZER TRIM UNITS									
300	6 1/2	6 1/4	6	4 1/4	3 1/4	2	1	1	1	1
350	8 1/2	8 1/4	8	5 1/2	4	2 1/2	1 1/2	1	1	1
400	8 1/2	8 1/2	8 1/2	6	4 1/2	3	2	1 1/2	1	1
450	8 1/2	8 1/2	8 1/2	6 1/4	5	3 1/2	2 1/4	1 3/4	1 1/4	1
500	8 1/2	8 1/2	8 1/2	6 1/2	5	3 3/4	2 1/2	2	1 1/2	1 1/4
535	8 1/2	8 1/2	8 1/2	6 1/2	5 1/4	4	3	2 1/2	2	1 1/2
550	8 1/2	8 1/2	8 1/2	6 1/2	5 1/4	4	3 1/4	2 3/4	2	1 3/4
600	8 1/2	8 1/2	8 1/2	6 1/2	5 1/2	4 1/4	3 3/4	3	2 1/4	-
640	8 1/2	8 1/2	8 1/2	6 1/2	5 1/2	4 1/4	3 3/4	-	-	-
650	8 1/2	8 1/2	8 1/2	6 3/4	5 1/2	4 1/2	-	-	-	-
670	8 1/2	8 1/2	8 1/2	6 3/4	5 1/2	4 1/2	-	-	-	-

FLAPS 15 AND 20

GROSS WEIGHT - 1000 LB.	CENTER OF GRAVITY - PERCENT MAC								
	14.0	17.0	24.0	29.0	34.0	39.0	41.0	43.0	44.0
	STABILIZER TRIM UNITS								
300	7 1/2	6 3/4	4 3/4	3 1/2	2	1	1	1	1
350	9 1/2	8 1/2	6	4 1/4	2 1/2	1 1/2	1	1	1
400	10 1/4	9	6 1/2	5	3	2	1 1/2	1	1
450	10	9	6 3/4	5 1/4	3 1/2	2 1/4	1 3/4	1 1/4	1
500	10	9	7	5 1/2	3 3/4	2 1/2	2	1 1/2	1 1/4
535	10	9	7	5 1/2	4	3	2 1/2	2	1 1/2
550	10	9	7	5 1/2	4	3 1/4	2 3/4	2	1 3/4
600	10	9	7 1/4	5 3/4	4 1/4	3 3/4	3	2 1/4	-
640	9 3/4	9	7 1/4	5 3/4	4 1/2	3 3/4	3 1/2	-	-
650	9 3/4	9	7	5 3/4	4 1/2	-	-	-	-
670	9 3/4	9	7	5 3/4	4 1/2	-	-	-	-

Revision Highlights

Revision 1 to D631W001-724 dated 06/07/2024

The purpose of this revision is to update the export control marking on each page of this Airplane Flight Manual for Export Classification.

The following changes comprise this revision:

Chapter - Front Matter

Title (Revised)

Revised Title page to update the export control marking for Export Classification.

Revision Approval (Revised)

This section uniquely identifies the approval authority and the reference number for this revision.

Log of Sections (Revised)

Revised to reflect sections changed in this revision.

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Title **A242708**

Appendix 724

Operation at Alternate Maximum Takeoff Weight of 573,000 Pounds (259,908 Kilograms)

777-200

D631W001

BOEING COMMERCIAL AIRPLANE GROUP, SEATTLE, WASHINGTON, U.S.A.

Revision Approval A242708

This Revision Approval may only be used in conjunction with a Log of Sections that refers to Revision Approval Number A242708 in the revision approval number column for the Revision Approval section.

Approved by:

Flight Analyst E-UM, ODA-300064-NM, for

06/07/2024

Manager, Flight Test & Human Factors Branch, AIR-710
Federal Aviation Administration

Approved Date

Log of Sections A242708

D631W001-724 Revision 1 Date: 06/07/2024

	Chapter/Section	Revision Approval Number	Approval Date
	Front Matter		
*	Title	A242708	06/07/2024
*	Revision Approval	A242708	06/07/2024
*	Log of Sections	A242708	06/07/2024
	Introduction	A152228	11/02/2015
	Certificate Limitations		
	Weight Limitations and Center of Gravity Limits	A151924	12/02/2015

* = Revised Sections

Introduction A152228

This appendix contains the Certificate Limitations for operation of 777 Model airplanes at alternate maximum taxi and takeoff weights. The **Weight Limitations and Center of Gravity Limits** provided in this appendix are applicable only when the appropriate Boeing Service Bulletin is incorporated.

Weight Limitations and Center of Gravity Limits A151924

	Pounds	Kilograms
Maximum Taxi Weight (MTW)	575,000	260,815
Maximum Takeoff Weight (MTOW)	573,000	259,908

Note:
The alternate maximum weight limits may be less as limited by the Center of Gravity Limits provided in this appendix and fuel density and fuel loading limits given in the basic Airplane Flight Manual. Refer to the Weight and Balance Manual for additional specific airplane loading limitations.

Alternate weights are applicable only when the appropriate Boeing Service Bulletin is incorporated.

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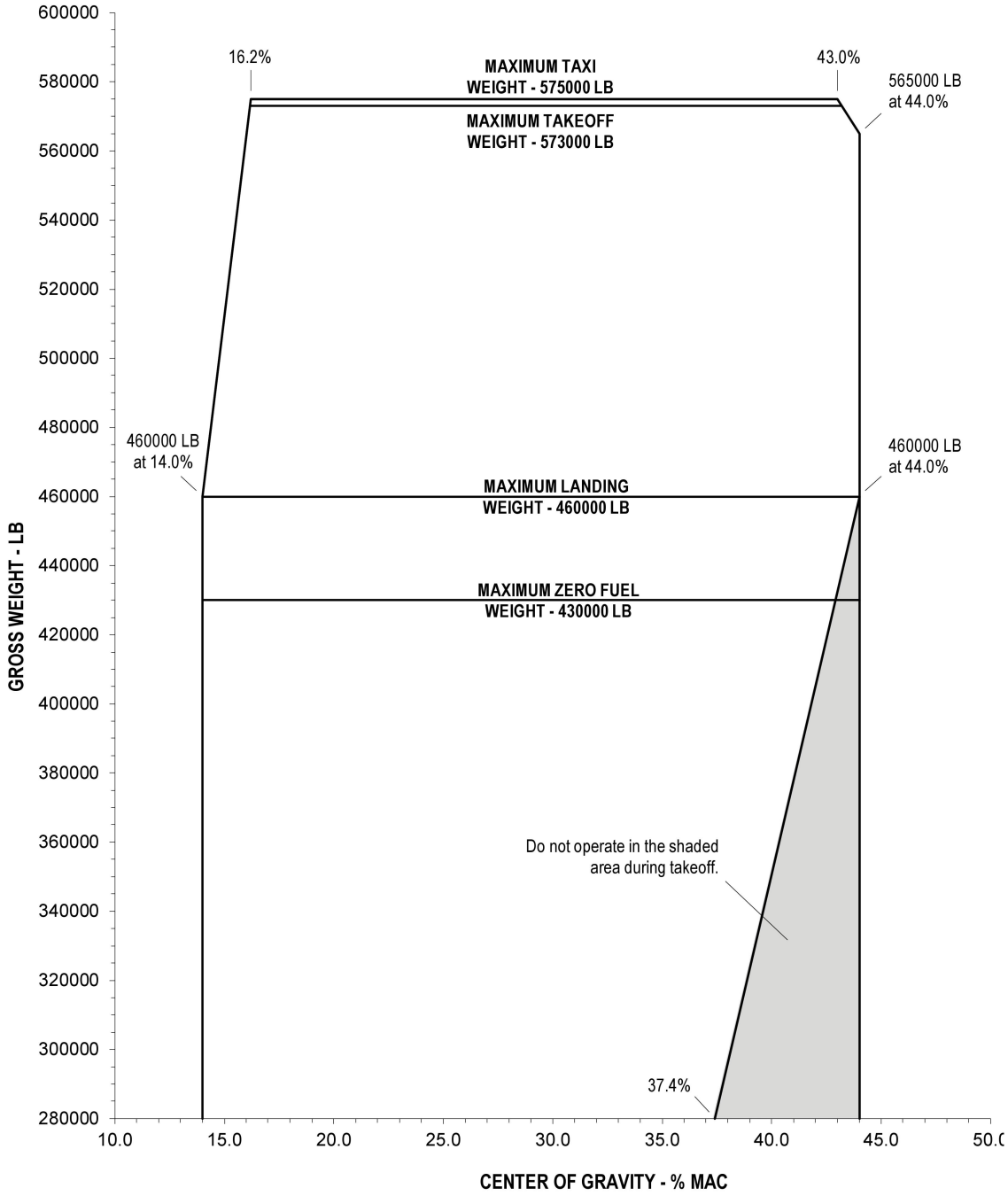
Section Weight Limitations and Center of Gravity Limits, continued from previous page A151924

Refer to the applicable Weight and Balance Manual for identification of
C.G. coordinates and specific loading/operating restrictions



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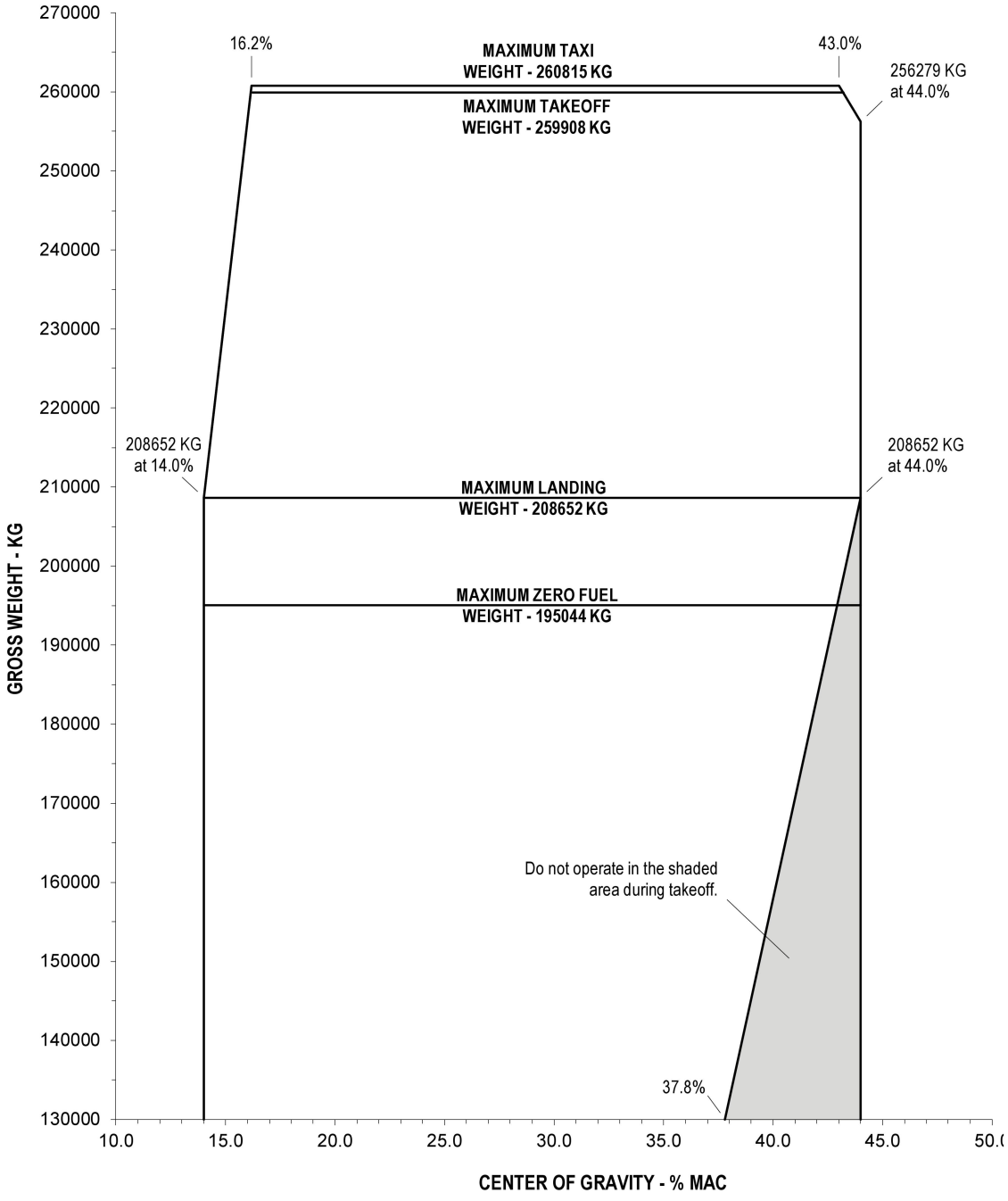
Refer to the applicable Weight and Balance Manual for identification of
C.G. coordinates and specific loading/operating restrictions



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Revision Highlights

Revision 13 to D631W001-3A dated 05/16/2024

Revised Title page to update the export control marking for Export Classification.

The following changes comprise this revision:

Chapter - Front Matter

Title (Revised)

Revised Title page to update the export control marking for Export Classification.

Revision Approval (Revised)

This section uniquely identifies the approval authority and the reference number for this revision.

Log of Sections (Revised)

Revised to reflect sections changed in this revision.

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Title **A242611**

Appendix 3A

Landing Gear Extended

777-200/-200LR/F

D631W001

BOEING COMMERCIAL AIRPLANE GROUP, SEATTLE, WASHINGTON, U.S.A.

Revision Approval A242611

This Revision Approval may only be used in conjunction with a Log of Sections that refers to Revision Approval Number A242611 in the revision approval number column for the Revision Approval section.

Approved by:

Flight Analyst E-UM, ODA-300064-NM, for

05/16/2024

Manager, Flight Test & Human Factors Branch, AIR-710
Federal Aviation Administration

Approved Date

Log of Sections A242611

D631W001-3A Revision 13 Date: 05/16/2024

	Chapter/Section	Revision Approval Number	Approval Date
	Front Matter		
*	Title	A242611	05/16/2024
*	Revision Approval	A242611	05/16/2024
*	Log of Sections	A242611	05/16/2024
	Introduction	A144760	07/31/2014
	Certificate Limitations		
	General	A144760	07/31/2014
	Weight Limitations	A121652	10/17/2013
	General - Kind of Airplane Operation	A121652	10/17/2013
	Electronics - Autopilot Flight Director System	A150104	04/20/2015
	Maximum Airspeed Limits	A144760	07/31/2014
	Maximum Operating Limit Speed	A121652	10/17/2013
	Reduced Vertical Separation Minimum (RVSM)	A121652	10/17/2013
	Non-Normal Procedures		
	General	A121652	10/17/2013
	Cabin Altitude (E)	A121652	10/17/2013
	Normal Procedures		
	General	A121652	10/17/2013
	Flight Management Computer System (FMCS)	A121652	10/17/2013
	Severe Turbulent Air Penetration	A121652	10/17/2013
	Traffic Alert and Collision Avoidance System (TCAS)	A150104	04/20/2015
	Performance		
	Flap Retraction Speed Schedule	A144760	07/31/2014
	Position Corrections	A144760	07/31/2014
	Takeoff	A121652	10/17/2013

* = Revised Sections

Introduction A144760

This appendix provides the additional certificate limitations, procedures and performance to operate the Model 777-200/200LR/F with the landing gear extended.

This appendix is used in conjunction with the Certificate Limitations, Non-Normal Procedures, Normal Procedures, and Performance Chapters of the basic Airplane Flight Manual (AFM) and the performance data determined from the Airplane Flight Manual Digital Performance Information (AFM-DPI) software identified by the Performance Software Serial Number(s) in the basic AFM; and other applicable appendices.

General A144760

This appendix contains the additional limitations, procedures, and performance to operate the Model 777-200/200LR/F with the landing gear extended. Flight data is based on drag associated with all-gear-down performance. This appendix is applicable to all 777-200/200LR/F engine airframe combinations.

The information contained within the Certificate Limitations, Non-Normal Procedures, Normal Procedures, and Performance Chapters of the basic AFM and AFM-DPI are applicable except as supplemented or amended herein.

Weight Limitations A121652

The maximum takeoff weight for gear down dispatch is 600,000 pounds (272,155 kilograms).

General - Kind of Airplane Operation A121652

Limitations are unchanged except that flight over water is limited to within 50 miles from land.

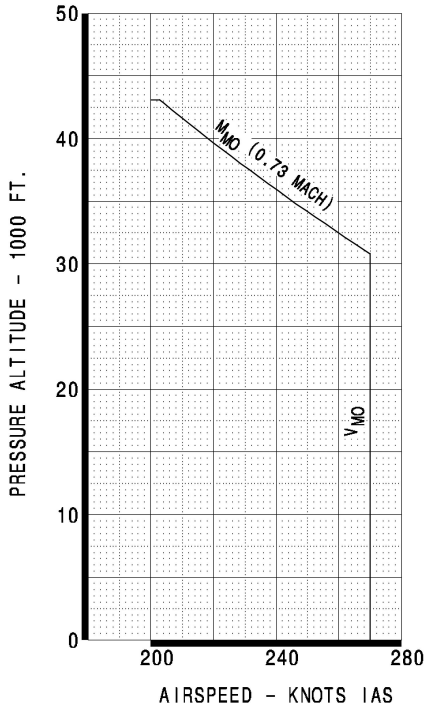
Electronics - Autopilot Flight Director System A150104

Do not use autothrottles when operating the airplane above 20,000 feet.

Maximum Airspeed Limits A144760

MAXIMUM AIRSPEED LIMITS

GEAR DOWN



P.C. D703107000 APP. 3A
D041W602 PG. 1-7

B. BARTEL	APPROVED	DATE
777-200/200 IGW	SUGAWARA	08-31-00

Maximum Operating Limit Speed A121652

Limitations are unchanged except:

V_{MO} and M_{MO} are reduced to 270 KIAS and .73 Mach.

The airspeed indicator and Mach-airspeed warning switch must be reprogrammed for V_{MO} and M_{MO}.

Reduced Vertical Separation Minimum (RVSM) A121652

Reduced Vertical Separation Minimum operations are prohibited when conducting landing gear extended operations.

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General A121652

Non-Normal Procedures are unchanged except:

Cabin Altitude (E) A121652

(Rapid Depressurization)

Target speed - 270 KIAS

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General A121652

Normal Procedures are unchanged except:

Flight Management Computer System (FMCS) A121652

The Flight Management Computer System (FMCS) does not contain special provisions for operation with landing gear extended. As a result, the FMCS will generate inappropriate enroute speed schedules, display non-conservative predictions of fuel burn and time-limited maximum altitude, and compute overly shallow descent path.

To obtain accurate ETA predictions, gear down cruise speed and altitude should be entered on the CRZ page of the Control and Display Unit (CDU). Appropriate gear down speeds should also be entered on the CLB and DES page and a STEP SIZE of zero should be entered on the PERF INIT or CRZ page. Use of the VNAV during descent, under these circumstances is not recommended.

Severe Turbulent Air Penetration A121652

The conditions for severe turbulent air penetration are unchanged except that the recommended airspeed for flight in severe turbulence is V_{REF} + 80 KIAS.

The maximum altitude is restricted as follows:

Altitude Restriction	
Gross Weight - LB (KG)	**Maximum Altitude (FT)**
Above 550,000 (249,475)	16,000
Above 500,000 (226,796) and less than or equal to 550,000 (249,475)	20,000
Less than or equal to 500,000 (226,796)	24,000

Traffic Alert and Collision Avoidance System (TCAS) A150104

Move transponder mode selector switch to traffic advisory (TA) only.

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Flap Retraction Speed Schedule A144760

The flap retraction speed schedule is unchanged except:

Final Segment Climb Speed:

V_{REF} + 60 KIAS (777-200)

V_{REF} + 70 KIAS (777-200LR/F)

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Position Corrections

A144760

POSITION CORRECTIONS

STANDBY SYSTEM

LANDING GEAR EXTENDED

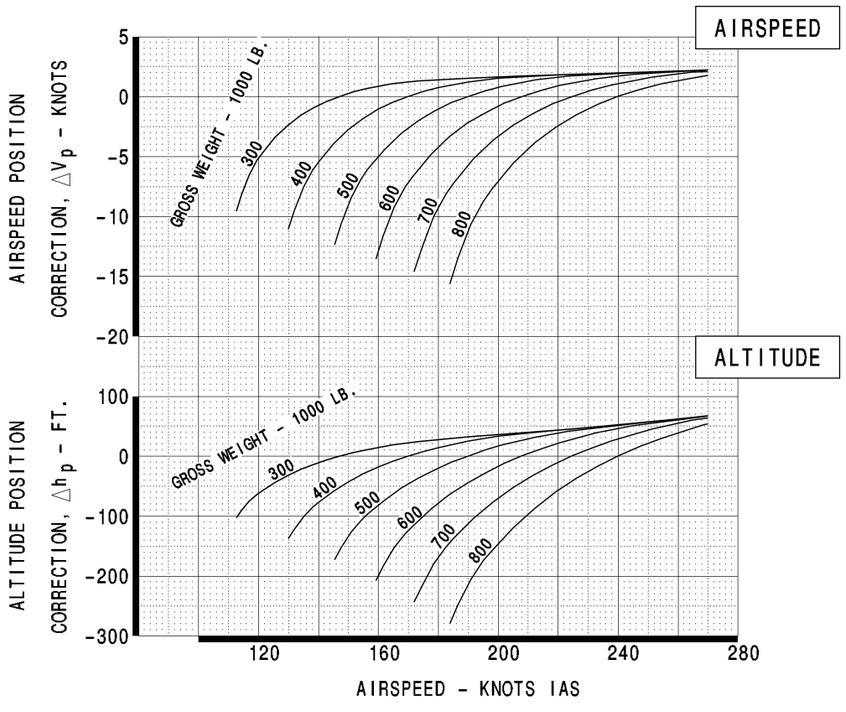
- APPLICABLE TO LOW SPEED OPERATIONS BELOW 15,000 FT. PRESSURE ALTITUDE.
- CALIBRATED AIRSPEED, $V_C = V_I + \Delta V_P$
- TRUE PRESSURE ALTITUDE, $h_p = h_i + \Delta h_p$

P.C. T703427001 APP. 3
D041W602-5 PG. 4-27

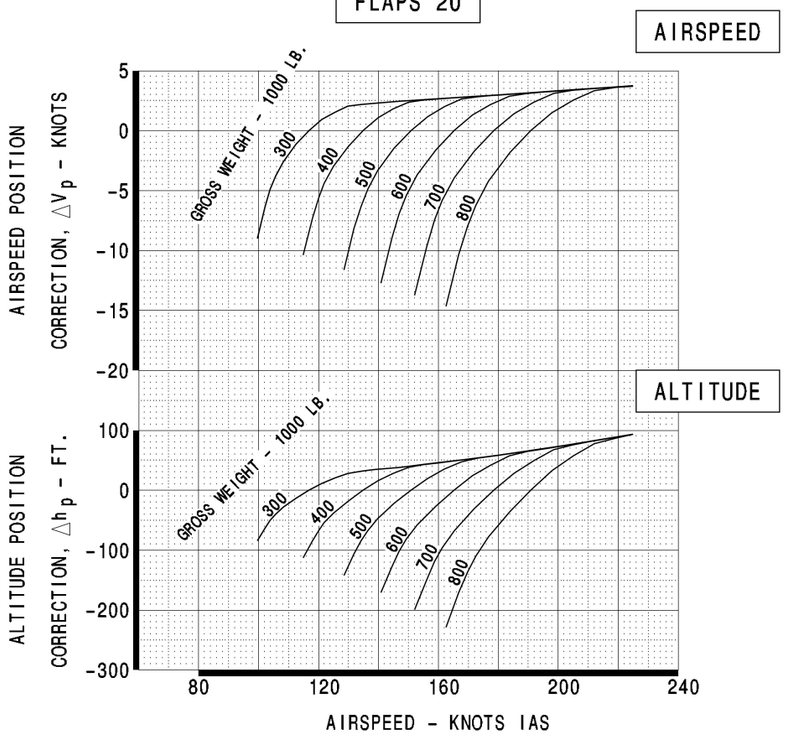
APPROVED V.HILL DATE 10-22-05

V. HILL
777-200LR

FLAPS UP



FLAPS 20



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Section Position Corrections, continued from previous page
A144760

POSITION CORRECTIONS

STANDBY SYSTEM

LANDING GEAR EXTENDED

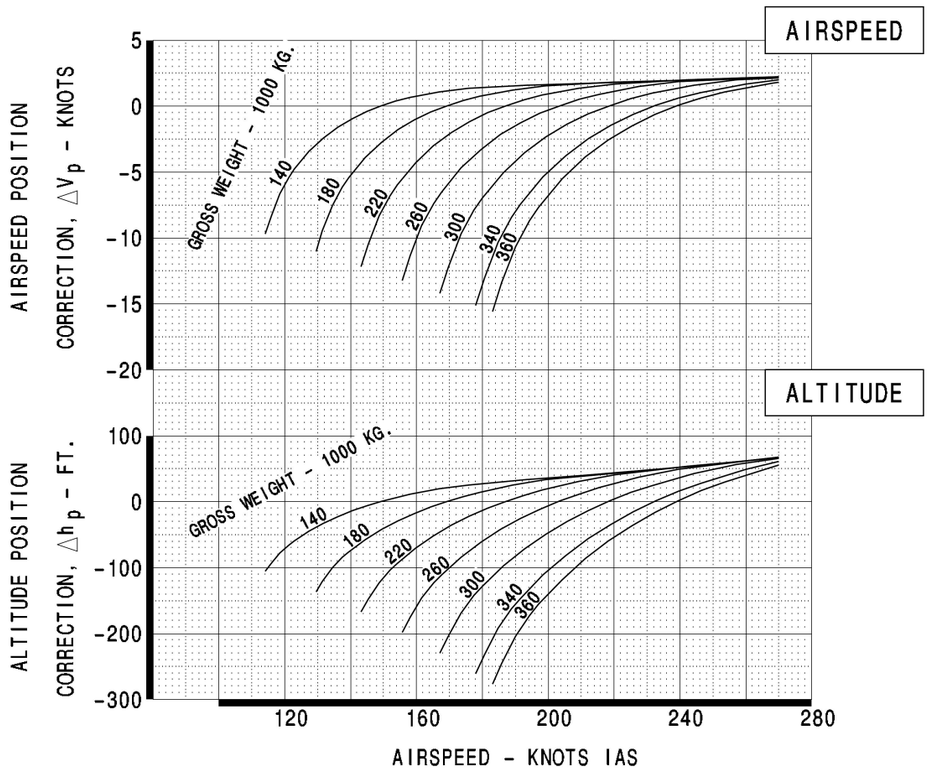
- APPLICABLE TO LOW SPEED OPERATIONS BELOW 15,000 FT. PRESSURE ALTITUDE.
- CALIBRATED AIRSPEED, $V_C = V_I + \Delta V_P$
- TRUE PRESSURE ALTITUDE, $h_p = h_i + \Delta h_p$

P.C. T703427003 APP. 3
D041W602-5 PG. 4-27

	APPROVED	DATE
V. HILL	V.HILL	10-22-05

V. HILL
777-200LR

FLAPS UP



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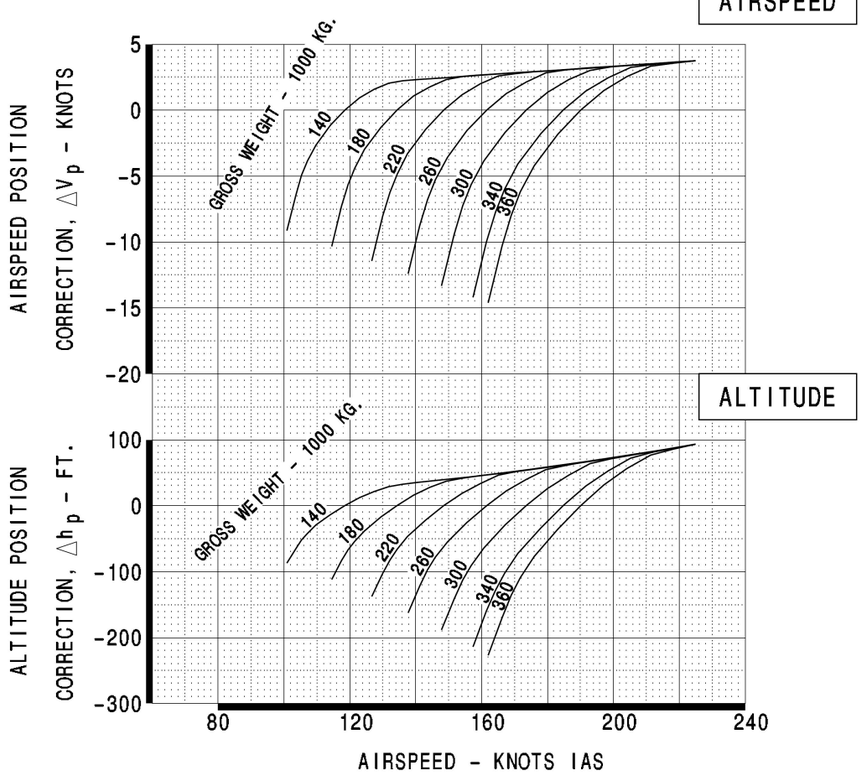

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Takeoff A121652

The conditions for flight performance are unchanged except that the landing gear will not be retracted after takeoff.

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Revision Highlights

Revision 1 to D631W001-721 dated 06/07/2024

The purpose of this revision is to update the export control marking on each page of this Airplane Flight Manual for Export Classification.

The following changes comprise this revision:

Chapter - Front Matter

Title (Revised)

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Revision Approval (Revised)

This section uniquely identifies the approval authority and the reference number for this revision.

Log of Sections (Revised)

Revised to reflect sections changed in this revision.

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Title **A242708**

Appendix 721

Operation at Alternate Maximum Takeoff Weight of 511,400 Pounds (231,967 Kilograms)

777-200

D631W001

BOEING COMMERCIAL AIRPLANE GROUP, SEATTLE, WASHINGTON, U.S.A.

Revision Approval A242708

This Revision Approval may only be used in conjunction with a Log of Sections that refers to Revision Approval Number A242708 in the revision approval number column for the Revision Approval section.

Approved by:

Flight Analyst E-UM, ODA-300064-NM, for

06/07/2024

Manager, Flight Test & Human Factors Branch, AIR-710
Federal Aviation Administration

Approved Date

Log of Sections A242708

D631W001-721 Revision 1 Date: 06/07/2024

	Chapter/Section	Revision Approval Number	Approval Date
	Front Matter		
*	Title	A242708	06/07/2024
*	Revision Approval	A242708	06/07/2024
*	Log of Sections	A242708	06/07/2024
	Introduction	A152228	11/02/2015
	Certificate Limitations		
	Weight Limitations and Center of Gravity Limits	A151924	12/02/2015

* = Revised Sections

Introduction A152228

This appendix contains the Certificate Limitations for operation of 777 Model airplanes at alternate maximum taxi and takeoff weights. The **Weight Limitations and Center of Gravity Limits** provided in this appendix are applicable only when the appropriate Boeing Service Bulletin is incorporated.

Weight Limitations and Center of Gravity Limits A151924

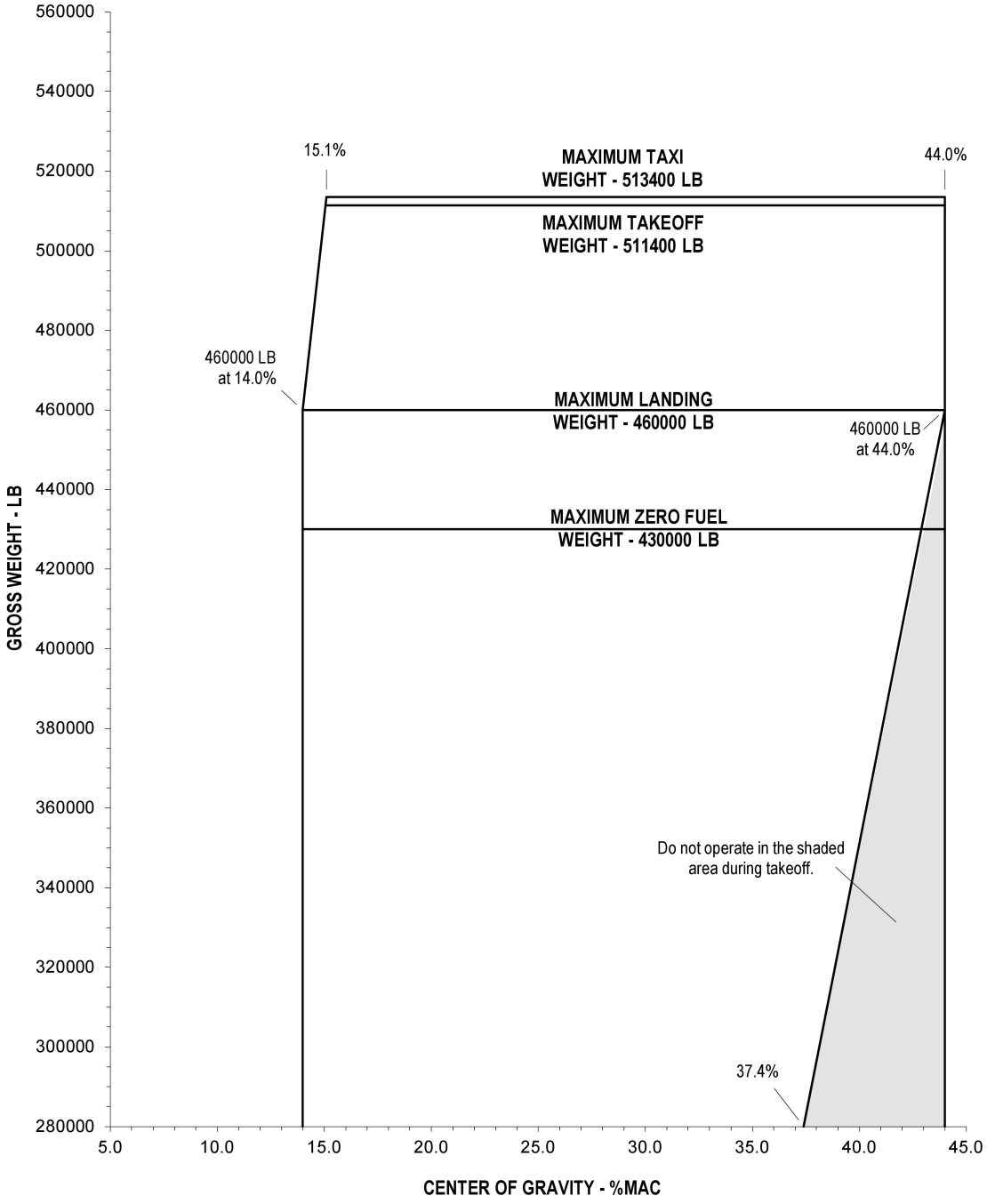
	Pounds	Kilograms
Maximum Taxi Weight (MTW)	513,400	232,874
Maximum Takeoff Weight (MTOW)	511,400	231,967

Note:
The alternate maximum weight limits may be less as limited by the Center of Gravity Limits provided in this appendix and fuel density and fuel loading limits given in the basic Airplane Flight Manual. Refer to the Weight and Balance Manual for additional specific airplane loading limitations.

Alternate weights are applicable only when the appropriate Boeing Service Bulletin is incorporated.

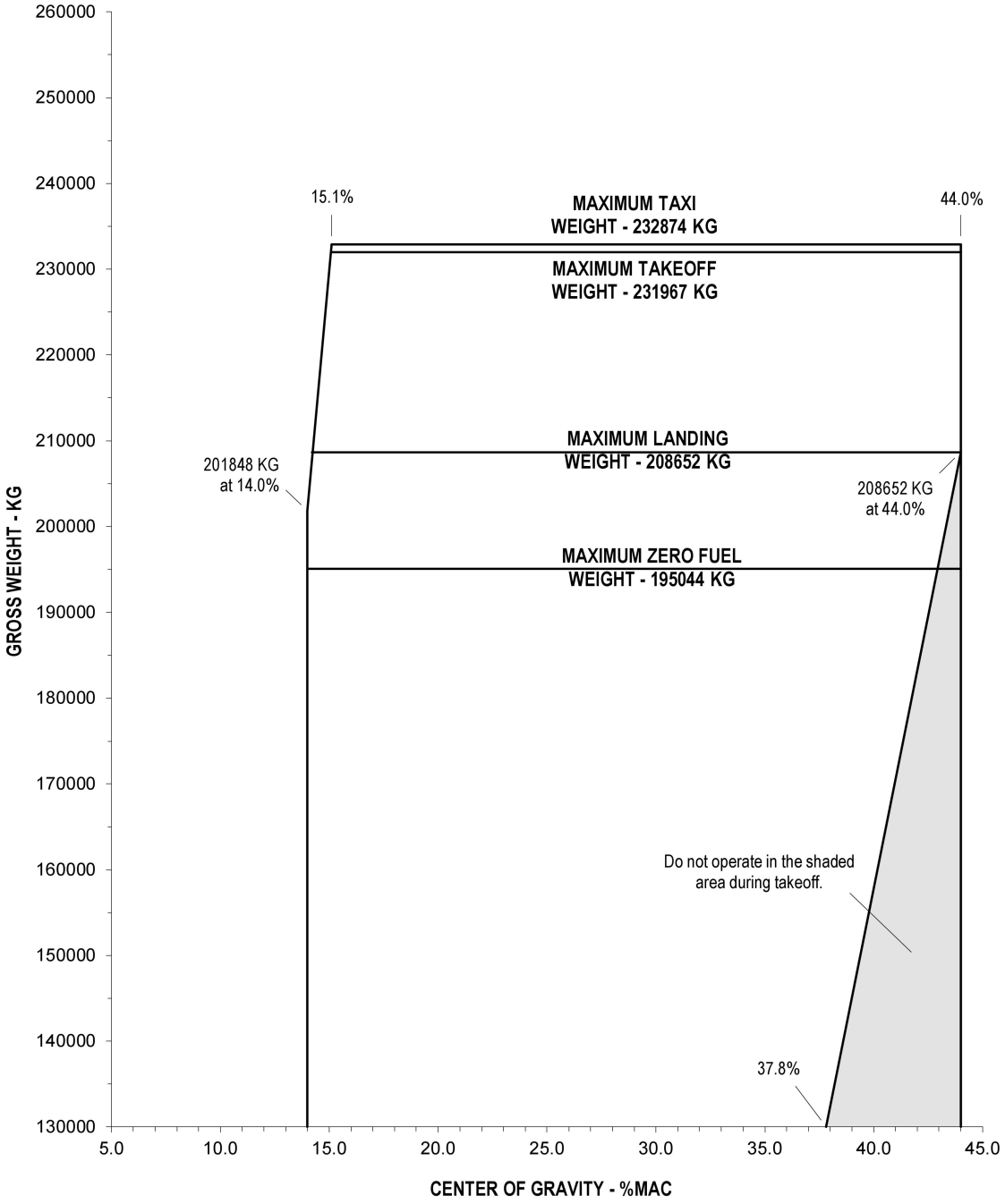
Continued on next page

Refer to the applicable Weight and Balance Manual for identification of C.G. coordinates and specific loading/operating restrictions



Continued on next page

Refer to the applicable Weight and Balance Manual for identification of
C.G. coordinates and specific loading/operating restrictions



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Revision Highlights

Revision 6 to D631W001-777CDL dated 06/07/2024

The purpose of this revision is to update the export control marking on each page of this Airplane Flight Manual for Export Classification.

The following changes comprise this revision:

Chapter - Front Matter

Title (Revised)

Revised Title page to update the export control marking for Export Classification.

Revision Approval (Revised)

This section uniquely identifies the approval authority and the reference number for this revision.

Log of Sections (Revised)

Revised to reflect sections changed in this revision.

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Title **A242708**

Appendix CDL

Model 777 Series
Configuration Deviation List

D631W001

BOEING COMMERCIAL AIRPLANE GROUP, SEATTLE, WASHINGTON, U.S.A.

Revision Approval A242708

This Revision Approval may only be used in conjunction with a Log of Sections that refers to Revision Approval Number A242708 in the revision approval number column for the Revision Approval section.

Approved by:

Flight Analyst E-UM, ODA-300064-NM, for

06/07/2024

Manager, Flight Test & Human Factors Branch, AIR-710
Federal Aviation Administration

Approved Date

Log of Sections A242708

D631W001-777CDL Revision 6 Date: 06/07/2024

	Chapter/Section	Revision Approval Number	Approval Date
	Front Matter		
*	Title	A242708	06/07/2024
*	Revision Approval	A242708	06/07/2024
*	Log of Sections	A242708	06/07/2024
	Preface	A121244	10/16/2013
	Introduction	A121244	10/16/2013
	Configuration Deviation List		
	General Limitations	A121244	10/16/2013
	21-32-01 Negative Pressure Relief Vent	A121244	10/16/2013
	21-52-01 ECS Ram Air Exhaust Louver	A180399	09/18/2018
	23-61-01 Static Discharger	A121244	10/16/2013
	32-12-01 Main Landing Gear Drag Strut Door	A162928	10/11/2016
	32-12-02 Main Landing Gear Trunnion Door	A162928	10/11/2016
	32-45-01 Wheel Hubcaps	A162928	10/11/2016
	33-31-01 External Cargo Loading Light Lens	A121244	10/16/2013
	33-41-01 Wing Illumination Light Lens	A121244	10/16/2013
	33-42-01 Nose Gear Landing and Taxi Light	A121244	10/16/2013
	33-43-01 Wing Tip Rear Position Light Lens	A121244	10/16/2013
	33-43-02 Tail Cone Position Light Lens	A152168	03/30/2016
	33-44-01 Upper Or Lower Fuselage Anti-Collision Light Lens	A152168	03/30/2016
	33-44-02 Tail Cone Anti-Collision Light Lens	A152168	03/30/2016
	33-45-01 Logo Light Lens	A121244	10/16/2013
	33-51-01 External Emergency Light Lens	A121244	10/16/2013
	52-11-01 Passenger Door Handle Covers	A121244	10/16/2013
	52-35-01 Aft Small Cargo Door Control Door	A121244	10/16/2013
	52-35-02 Aft Cargo Handling Control Door	A121244	10/16/2013
	52-37-01 Aft Large Cargo Door Control Door	A121244	10/16/2013
	52-37-02 Main Cargo Handling Control Door	A121244	10/16/2013
	52-81-01 Main Landing Gear Door Heat Shield	A121244	10/16/2013
	52-81-02 Main Landing Gear Door Bolt Head Cover Plugs	A121244	10/16/2013
	54-52-01 Forward Fairing Pressure Relief Door	A121244	10/16/2013
	54-53-01 Strut Aft Mount Access Panel	A162928	10/11/2016
	54-53-02 Strut Pressure Relief Door	A121244	10/16/2013
	55-20-01 Elevator Access Cover	A121244	10/16/2013
	55-20-02 Elevator Inboard End Seals	A180391	08/31/2018
	55-20-03 Horizontal Stabilizer-to-Elevator Blade Seals	A180399	09/18/2018

* = Revised Sections

Log of Sections (Continued) A242708

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55-40-01 Vertical Stabilizer Tip Fairing Rudder Seal	A180399	09/18/2018
55-40-02 Rudder-to-Fuselage Seal	A121244	10/16/2013
55-40-03 Rudder-to-Tab Streamwise Seal	A121244	10/16/2013
55-40-04 Rudder Tab-to-Fuselage Seal	A121244	10/16/2013
55-40-05 Rudder Access Cover	A121244	10/16/2013
55-40-06 Rudder Tab Access Cover	A121244	10/16/2013
55-40-07 Rudder Tab Control Rod Fairing	A162928	10/11/2016
55-40-08 Vertical Stabilizer-To-Fuselage Seal	A162928	10/11/2016
55-40-09 Vertical Stabilizer-to-Rudder Blade Seals	A180391	08/31/2018
55-40-10 Rudder-to-Tab Blade Seals	A180399	09/18/2018
56-11-01 Number 1 Windshield Aerodynamic Sealant	A121244	10/16/2013
56-11-02 Number 3 Windshield Aerodynamic Sealant	A121244	10/16/2013
57-00-01 Wing Vortex Generator	A121244	10/16/2013
57-00-02 Outboard Flap Vortex Generator	A162928	10/11/2016
57-26-01 Inboard Flap Center Track Fairing	A162928	10/11/2016
57-26-02 Inboard Flap Center Track Fairing Seal	A162928	10/11/2016
57-26-03 Inboard Flap Inboard Support Fairing Seal	A162928	10/11/2016
57-26-04 Outboard Flap Track Fairing Access Panel	A162928	10/11/2016
57-26-05 Outboard Flap Track Fairing	A121244	10/16/2013
57-26-06 Outboard Flap Track Fairing Seal	A162928	10/11/2016
57-26-07 Outboard Flap Auxiliary Track Fairing	A121244	10/16/2013
57-26-08 Outboard Flap Auxiliary Track Fairing Seal	A162928	10/11/2016
57-26-09 Inboard Flap Track Flaperon Fairing Seals	A162928	10/11/2016
57-26-10 Inboard Flap Inboard Fairing - Aft Segment	A121244	10/16/2013
57-31-01 Wing Tip Access Panel	A121244	10/16/2013
57-31-02 Wing Tip Fairing	A121244	10/16/2013
57-31-03 Raked Tip	A162928	10/11/2016
57-41-01 Outboard Leading Edge Slat Restoration Seal Assembly	A162928	10/11/2016
57-41-02 Wing Fixed Leading Edge Lower Panel	A162928	10/11/2016
57-41-03 Slat Linkage Fairing Panel	A162928	10/11/2016
57-41-04 Slat Spanwise Flow Seal	A162928	10/11/2016
57-41-05 Outboard Slat Spanwise Bulb Seal	A162928	10/11/2016
57-41-06 Slat Spanwise Lower Flexible Seal	A162928	10/11/2016
57-41-08 Inboard Slat Inboard End Bulb Seal	A121244	10/16/2013
57-41-09 Krueger End Seal	A162928	10/11/2016
57-41-23 Inboard Slat Inboard End Blade Seal	A211964	11/05/2021
57-51-01 Wing Fixed Trailing Edge Lower Panel	A164397	01/10/2017
57-51-02 Inboard Flap Inboard Seal	A180399	09/18/2018

* = Revised Sections

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57-51-03 Overwing Fairing Torque Tube Door	A121244	10/16/2013
57-51-04 Number 3 and 6 Flap Fairings Seals	A121244	10/16/2013
57-53-01 Flaperon Inboard Seal	A121244	10/16/2013
57-53-02 Inboard Flap Leading Edge Seal	A121244	10/16/2013
57-53-03 Outboard Flap Leading Edge Seal	A121244	10/16/2013
57-63-02 Flaperon Cove Lip Door Streamwise Seal	A121244	10/16/2013
57-63-03 Flaperon Cove Lip Door Hingewise Seal	A162928	10/11/2016
57-63-04 Flaperon Outboard Seal	A121244	10/16/2013
57-63-05 Aileron Streamwise Seal	A121244	10/16/2013
57-63-06 Aileron Power Control Unit Fairing	A121244	10/16/2013
57-63-07 Aileron Mass Balance Seal	A162928	10/11/2016
57-63-08 Aileron Hinge Blade Seal	A180391	08/31/2018
57-63-09 Aileron Hinge Blade Seal and Seal Retainer	A180391	08/31/2018
57-71-01 Spoiler Streamwise Seal	A121244	10/16/2013
57-71-02 Spoiler Leading Edge Seal	A121244	10/16/2013
71-11-01 Oil Tank Sight Glass Door and Pressure Relief Door	A121244	10/16/2013
71-11-02 Engine Cowl Inlet Streamwise Aerofiller	A121244	10/16/2013
71-11-03 Fan Cowl Pressure Relief Door	A121244	10/16/2013
71-11-04 Oil Tank Access Door	A121244	10/16/2013
71-11-05 Fan Cowl Hoist Point Plugs	A121244	10/16/2013
72-00-01 Debris Shield	A121244	10/16/2013
78-31-01 Thrust Reverser Sleeve Actuator Access Panel	A121244	10/16/2013
78-31-02 Thrust Reverser Blocker Door	A162928	10/11/2016
78-31-03 Thrust Reverser Cascade Segment	A121244	10/16/2013
78-31-04 Thrust Reverser Wedge Fairing	A162928	10/11/2016
78-31-05 Thrust Reverser Blocker Door Seals	A121244	10/16/2013
78-31-06 Thrust Reverser Hinge Beam Forward Fairing Access Door	A180399	09/18/2018

* = Revised Sections

Preface A121244

This Airplane Flight Manual (AFM) appendix complies with the U.S. Federal Aviation Administration (FAA) Title 14 of the Code of Federal Regulations (CFR). This AFM appendix adds, amends, replaces, and/or supersedes information found in the FAA approved AFM.

This AFM appendix is approved by the FAA.

Each revision to this AFM appendix includes a new Log of Sections listing the effective sections comprising the AFM appendix. Revisions to text material are indicated by vertical bars in the margins.

Introduction A121244

This Configuration Deviation List (CDL) provides additional certificate limitations for operation of the Boeing Model 777 series airplane without certain secondary airframe and engine parts as listed herein. The Certificate Limitations in the Airplane Flight Manual are applicable except as amended in this appendix.

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General Limitations A121244

This Configuration Deviation List contains additional certificate limitations for operation of the Boeing Model 777 series airplane without certain secondary airframe and engine parts as listed herein. The Certificate Limitations in the Airplane Flight Manual are applicable except as amended in this appendix.

The associated limitations must be listed on a placard affixed in the cockpit in clear view of the pilot-in-command and other appropriate crew member(s).

Operation with those missing parts requiring a reduction of V_{MO}/M_{MO} is permitted only when the airplane has the appropriate alternate V_{MO} set prior to flight.

The pilot-in-command will be notified of each operation with a missing part(s) by listing the missing part(s) on the flight or dispatch release.

The operator will list on the aircraft logbook an appropriate notation covering the missing part(s) on each flight.

If an additional part is lost in flight, the airplane may not depart the airport at which it landed following this event until it again complies with the limitations of this appendix. This, of course, does not preclude the issuance of a ferry permit to allow the airplane to be flown to a point where the necessary repairs or replacements can be made.

Unless otherwise specified herein, parts from different sub-systems may be missing. In addition, any combination of the authorized number of parts from a single sub-system may be missing unless otherwise specified. The performance decrements are cumulative. Where performance decrements are listed as negligible, no more than three negligible items may be missing without taking further decrement. For each missing item more than three, reduce the takeoff, landing and enroute climb limits by 100 pounds, unless otherwise indicated.

The takeoff performance decrements in this appendix are to be applied to the performance limited takeoff weights determined from:

> Field length, first segment climb, second segment climb, final segment climb, or obstacles in the takeoff flight path.

The enroute performance decrements in this appendix are to be applied to the weight limit determined from enroute, one-engine-inoperative climb performance.

The landing performance decrements in this appendix are to be applied to the performance limited landing weights determined from:

> Landing field length, landing climb, or approach climb.

The numbering and designation of sub-systems in this appendix is based on ATA Specification 100. The parts within each sub-system are identified by functional description and, when necessary, by part numbers.

Continued on next page

Section General Limitations, continued from previous page

Items are applicable to all 777 engine/airframe combinations unless otherwise designated.

21-32-01 Negative Pressure Relief Vent A121244

Any number may be missing. With one or more negative pressure relief vents missing, the flight must be conducted unpressurized, cargo compartments must remain empty or carry only non-combustible materials, and extended over water flight is prohibited.

Reduce performance limited weights by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777	4	Negligible	Negligible	Negligible

21-52-01 ECS Ram Air Exhaust Louver A180399

Any number may be missing. Note: The production design of the 777-300 does not include ECS Ram Air Exhaust Louvers. Some 777-300 have louvers installed via Service Bulletin.

For 777-200: Not applicable to Line Number 1, 10, 18, 41 and after Line Number 42 or after incorporation of Boeing Service Bulletin 777-21-0011.

For 777-300ER: Applicable to Line Number 530, 538 and on.

For 777-200LR/F: Applicable to Line Number 504, 519 and on.

Reduce performance limited weights by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777-200 Applicable upon incorporation of Boeing Service Bulletin installing Ram Air Exhaust Louvers	6	Negligible	Negligible	Negligible
777-200LR/F	6	200 lb / 91 kg	450 lb / 205 kg	150 lb / 69 kg
777-300/-300ER	6	No Decrement	No Decrement	No Decrement

23-61-01 Static Discharger A121244

For all airplane operations, a maximum of 5 dischargers may be missing. The following quantity of dischargers must be installed at the indicated locations: two of the five most outboard dischargers on each wing, two of the four most outboard dischargers on each horizontal stabilizer, and two of the four most top dischargers on the vertical stabilizer.

Reduce performance limited weights by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777-200/300	50	No decrement	No decrement	No decrement
777-200LR/F/300ER	54	No decrement	No decrement	No decrement

32-12-01 Main Landing Gear Drag Strut Door A162928

One may be missing.

Note: This item may not be missing in combination with items 32-12-02 or 57-51-01.

Limit speed to 270 KIAS/0.73 Mach.

If "ALTERNATE GEAR DOWN DISPATCH" switch is installed, then the switch must be placed in the "VMO" position.

Reduce performance limited weights by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777-200				
PW4084	2	2400 lb / 1089 kg	6000 lb / 2722 kg	150 lb / 69 kg
PW4090	2	2700 lb / 1225 kg	5400 lb / 2450 kg	150 lb / 69 kg
GE90-85B	2	2700 lb / 1225 kg	4500 lb / 2042 kg	150 lb / 69 kg
GE90-90B	2	3000 lb / 1361 kg	5100 lb / 2314 kg	200 lb / 91 kg
GE90-94B	2	3000 lb / 1361 kg	6000 lb / 2722 kg	150 lb / 69 kg
RR884	2	2100 lb / 953 kg	4500 lb / 2042 kg	150 lb / 69 kg
RR892	2	3300 lb / 1497 kg	5100 lb / 2314 kg	150 lb / 69 kg
RR895	2	2400 lb / 1089 kg	5100 lb / 2314 kg	250 lb / 114 kg
777-300				
PW4090	2	2400 lb / 1089 kg	5400 lb / 2450 kg	150 lb / 69 kg
PW4098	2	3600 lb / 1633 kg	5400 lb / 2450 kg	150 lb / 69 kg
RR892	2	2400 lb / 1089 kg	4800 lb / 2178 kg	150 lb / 69 kg
777-300ER	2	2600 lb / 1180 kg	5400 lb / 2450 kg	150 lb / 69 kg
777-200LR/F	2	2700 lb / 1225 kg	5100 lb / 2314 kg	200 lb / 91 kg

32-12-02 Main Landing Gear Trunnion Door A162928

One may be missing.

Note: This item may not be missing in combination with items 32-12-01 or 57-51-01.

Limit speed to 270 KIAS/0.73 Mach.

If "ALTERNATE GEAR DOWN DISPATCH" switch is installed, then the switch must be placed in the "VMO" position.

Reduce performance limited weights by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777-200				
PW4084	2	2450 lb / 1112 kg	6050 lb / 2745 kg	150 lb / 69 kg
PW4090	2	2750 lb / 1248 kg	5450 lb / 2473 kg	150 lb / 69 kg
GE90-85B	2	2750 lb / 1248 kg	4550 lb / 2064 kg	150 lb / 69kg
GE90-90B	2	3050 lb / 1384 kg	5150 lb / 2337 kg	250 lb / 114 kg
GE90-94B	2	3050 lb / 1384 kg	6050 lb / 2745 kg	150 lb / 69 kg
RR884	2	2150 lb / 976 kg	4550 lb / 2064 kg	150 lb / 69 kg
RR892	2	3350 lb / 1520 kg	5150 lb / 2337 kg	200 lb / 91 kg
RR895	2	2450 lb / 1112 kg	5150 lb / 2337 kg	250 lb / 114 kg
777-300				
PW4090	2	2450 lb / 1112 kg	5450 lb / 2473 kg	150 lb / 69 kg
PW4098	2	3650 lb / 1656 kg	5450 lb / 2473 kg	150 lb / 69 kg
RR892	2	2450 lb / 1112 kg	4850 lb / 2200 kg	150 lb / 69 kg
777-300ER	2	2600 lb / 1180 kg	5450 lb / 2473 kg	150 lb / 69 kg
777-200LR/F	2	2750 lb / 1248 kg	5150 lb / 2337 kg	200 lb / 91 kg

32-45-01 Wheel Hubcaps A162928

One main wheel hubcap per each six wheel main gear truck may be missing.

One or both nose wheel hubcaps may be missing.

Reduce performance limited weights by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777	14	150 lb / 69 kg	200 lb / 91 kg	150 lb / 69 kg

33-31-01 External Cargo Loading Light Lens A121244

Any number may be missing.

Reduce performance limited weights by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777-200/200LR/ 300/300ER	4	Negligible	Negligible	Negligible
777F	5	Negligible	Negligible	Negligible

33-41-01 Wing Illumination Light Lens A121244

Both may be missing.

Reduce performance limited weights by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777	2	Negligible	Negligible	Negligible

33-42-01 Nose Gear Landing and Taxi Light A121244

Any number may be missing.

Reduce performance limited weights by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777	4	No decrement	No decrement	No decrement

33-43-01 Wing Tip Rear Position Light Lens A121244

Both may be missing.

Note: When the lens is missing, disconnect electrical power and remove light bulb, reflector, lens cover and lens cover support. With the rest of the light assembly intact, cover the opening with speed tape.

Reduce performance limited weights by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777	2	No decrement	No decrement	No decrement

33-43-02 Tail Cone Position Light Lens A152168

One may be missing.

Note:
1. With the rest of the light assembly intact, cover the opening with speed tape. Pull and collar the Tail Cone Position Light circuit breaker, C33020.
2. Dispatch using MMEL item 33-43-02.

Reduce performance limited weights by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777	1	Negligible	Negligible	Negligible

33-44-01 Upper Or Lower Fuselage Anti-Collision Light Lens A152168

Both may be missing.

Note:
1. When the lens is missing, disconnect electrical power and remove light bulb, reflector, lens cover and lens cover support. With the rest of the light assembly intact, cover the opening with speed tape.
2. CDL item 33-44-02 may not be missing.
3. Dispatch using MMEL item 33-44-01.

Reduce performance limited weights by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777	2	No decrement	No decrement	No decrement

33-44-02 Tail Cone Anti-Collision Light Lens A152168

One may be missing.

Note:
1. When the lens is missing, unplug (cap and stow) the connector to the Tail Cone Anti-Collision Light. With the rest of the light assembly intact, cover the opening with speed tape.
2. CDL item 33-44-01 may not be missing.
3. Dispatch using MMEL item 33-44-01.

Reduce performance limited weights by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777	1	Negligible	Negligible	Negligible

33-45-01 Logo Light Lens A121244

Any number may be missing.

Note: Openings created by the missing lenses must be covered with "speed tape" (Permacel II or 3M 425). Pull and collar light circuit breaker. Inspect condition of "speed tape" every other flight.

Reduce performance limited weights by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777	4	Negligible	Negligible	Negligible

33-51-01 External Emergency Light Lens A121244

One may be missing.

Reduce performance limited weights by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777-200/200LR	8	Negligible	Negligible	Negligible
777-300/300ER	14	Negligible	Negligible	Negligible
777F	2	Negligible	Negligible	Negligible

52-11-01 Passenger Door Handle Covers A121244

Any number may be missing.

Reduce performance limited weights by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777-200/200LR	16	Negligible	Negligible	Negligible
777-300/300ER	20	Negligible	Negligible	Negligible
777F	4	Negligible	Negligible	Negligible

52-35-01 Aft Small Cargo Door Control Door A121244

May be missing.

Reduce performance limited weights by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777	1	Negligible	Negligible	Negligible

52-35-02 Aft Cargo Handling Control Door A121244

May be missing.

Reduce performance limited weights by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777	1	Negligible	Negligible	Negligible

52-37-01 Aft Large Cargo Door Control Door A121244

May be missing.

Reduce performance limited weights by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777	1	Negligible	Negligible	Negligible

52-37-02 Main Cargo Handling Control Door A121244

May be missing.

Reduce performance limited weights by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777F	1	Negligible	Negligible	Negligible

52-81-01 Main Landing Gear Door Heat Shield A121244

One may be missing provided the associated air conditioning pack is placarded DO NOT OPERATE and is considered to be inoperative, the remaining pack operates normally, and flight remains within 60 minutes of a suitable airport. Appropriate performance adjustments must be applied according to operation with an inoperative air conditioning pack.

Reduce performance limited weights by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777	2	Negligible	Negligible	Negligible

52-81-02 Main Landing Gear Door Bolt Head Cover Plugs A121244

Any number may be missing.

Reduce performance limited weights by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777	12	Negligible	Negligible	Negligible

54-52-01 Forward Fairing Pressure Relief Door A121244

Both may be missing.

Reduce performance limited weights for each missing door by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777 RR	2	150 lb / 69 kg	200 lb / 91 kg	150 lb / 69 kg

54-53-01 Strut Aft Mount Access Panel A162928

Any number may be missing.

Reduce performance limited weights for each missing panel by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777				
PW	4	Negligible	Negligible	Negligible
GE	6	Negligible	Negligible	Negligible
RR	2	Negligible	Negligible	Negligible

54-53-02 Strut Pressure Relief Door A121244

All may be missing.

Reduce performance limited weights for each missing door by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777 PW	8	Negligible	Negligible	Negligible
777 GE	4	Negligible	Negligible	Negligible
777 RR	2	Negligible	Negligible	Negligible

55-20-01 Elevator Access Cover A121244

Any number may be missing.

Reduce performance limited weights by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777	8	Negligible	Negligible	Negligible

55-20-02 Elevator Inboard End Seals A180391

Both may be missing. Note: some line numbers do not have these seals.

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777	2	No Decrement	No Decrement	No Decrement

55-20-03 Horizontal Stabilizer-to-Elevator Blade Seals A180399

Up to 10 ft (120 inches) may be missing from the airplane. No more than 5 ft (60 inches) per horizontal stabilizer semi-span may be missing. Seals may not be missing on both upper and lower surfaces of the same horizontal stabilizer semi-span.

Reduce performance for each foot of missing seal by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777	24 (Note 1)	50 lb / 23 kg	100 lb / 46 kg	50 lb / 23 kg
777-200, 777-300	52 (Note 2)	50 lb / 23 kg	100 lb / 46 kg	50 lb / 23 kg

Note 1: Current production 24 seal configuration (all 777 models)
Note 2: Early production 52 seal configuration (777-200, 777-300 only)

55-40-01 Vertical Stabilizer Tip Fairing Rudder Seal A180399

Any number and length of seals may be missing.

Reduce performance limited weights by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777	3	Negligible	Negligible	Negligible

55-40-02 Rudder-to-Fuselage Seal A121244

Any number may be missing.

Reduce performance limited weights for each missing seal by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777	4	350 lb / 159 kg	550 lb / 249 kg	300 lb / 136 kg

55-40-03 Rudder-to-Tab Streamwise Seal A121244

Both may be missing.

Reduce performance limited weights for each missing seal by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777	2	150 lb / 68 kg	200 lb / 91 kg	Negligible

55-40-04 Rudder Tab-to-Fuselage Seal A121244

Both may be missing.

Reduce performance limited weights for each missing seal by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777	2	150 lb / 68 kg	250 lb / 113 kg	Negligible

55-40-05 Rudder Access Cover A121244

Any number may be missing.

Reduce performance limited weights by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777	4	Negligible	Negligible	Negligible

55-40-06 Rudder Tab Access Cover A121244

Both may be missing.

Reduce performance limited weights by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777	2	Negligible	Negligible	Negligible

55-40-07 Rudder Tab Control Rod Fairing A162928

One may be missing.

Reduce performance limited weights by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777-200/300/300ER	3	400 lb / 182 kg	650 lb / 295 kg	350 lb / 159 kg
777-200LR/F	3	300 lb / 137 kg	550 lb / 250 kg	250 lb / 114 kg

55-40-08 Vertical Stabilizer-To-Fuselage Seal A162928

Two may be missing. Any length of those two seals may be missing.

Reduce performance limited weights by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777	9	Negligible	Negligible	Negligible

55-40-09 Vertical Stabilizer-to-Rudder Blade Seals A180391

Up to 7.5 ft (90 inches) may be missing from one side of the stabilizer only. The seal on the opposite side must be intact.

Reduce performance for each foot of missing seal by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777-200/-300	13 (Note 1)	250 lb / 114 kg	400 lb / 182 kg	250 lb / 114 kg
777-200/-300	20 (Note 2)	250 lb / 114 kg	400 lb / 182 kg	250 lb / 114 kg
777-200LR/-300ER/F	13	200 lb / 91 kg	350 lb / 159 kg	200 lb / 91 kg

Note 1: Current production 13 seal configuration
Note 2: Early production 20 seal configuration

55-40-10 Rudder-to-Tab Blade Seals A180399

All of the seal may be missing from one side of the rudder only. The seal on the opposite side must be intact.

Reduce performance for each foot of missing seal by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777-200/-300	15 (Note 1)	150 lb / 69 kg	250 lb / 114 kg	150 lb / 69 kg
777-200	16 (Note 2)	150 lb / 69 kg	250 lb / 114 kg	150 lb / 69 kg
777-200LR/-300ER/F	15 (Note 1)	100 lb / 46 kg	200 lb / 91 kg	100 lb / 46 kg

Note 1: Current production 15 seal configuration
Note 2: Early production 16 seal configuration (777-200 only)

56-11-01 Number 1 Windshield Aerodynamic Sealant A121244

Both may be missing.

Reduce performance limited weights by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777	2	Negligible	Negligible	Negligible

56-11-02 Number 3 Windshield Aerodynamic Sealant A121244

Both may be missing.

Reduce performance limited weights by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777	2	Negligible	Negligible	Negligible

57-00-01 Wing Vortex Generator A121244

Two per wing may be missing. Missing vortex generators must not be adjacent.

Reduce performance limited weights by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777-200/300	32	No decrement	No decrement	No decrement
777-200LR/F	46	No decrement	No decrement	No decrement
777-300ER prior to Line Number 530 and 531, 532, 535 and 536	32	No decrement	No decrement	No decrement
777-300ER Line Number 504, 519, 530, 538 and on or after incorporation of Boeing Service Bulletin 777-57-0052	46	No decrement	No decrement	No decrement

57-00-02 Outboard Flap Vortex Generator A162928

Eight (4 on each wing) may be missing. Increase landing approach speed V_{REF} by 2 knots.

Reduce performance limited weights for any number missing by:

Applicable Models	Number Installed	Takeoff and Enroute	Approach and Landing	Landing Field Length	Max Quick Turnaround
777-300	100	No decrement	6500 lb / 2949 kg	14,100 lb / 6396 kg	6000 lb / 2722 kg
777-300ER	100	No decrement	500 lb / 227 kg	16,400 lb / 7439 kg	13,400 lb / 6079 kg
777-200LR/F	100	No decrement	500 lb / 227 kg	155,000 lb / 70,307 kg or increase landing field length by 230 ft / 71 m	13,400 lb / 6079 kg

57-26-01 Inboard Flap Center Track Fairing A162928

One may be missing. The aft segment should be removed if the forward segment is missing.

Reduce performance limited weights by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777	2	250 lb / 114 kg	400 lb / 182 kg	250 lb / 114 kg

57-26-02 Inboard Flap Center Track Fairing Seal A162928

Eight may be missing.

Reduce performance limited weights for each foot of missing seal by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777	16	100 lb / 46 kg	100 lb / 46 kg	100 lb / 46 kg

57-26-03 Inboard Flap Inboard Support Fairing Seal A162928

Eleven may be missing.

Reduce performance limited weights for each foot of missing seal by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777	22	300 lb / 137 kg	450 lb / 205 kg	No decrement

57-26-04 Outboard Flap Track Fairing Access Panel A162928

Any number may be missing.

Reduce performance limited weights for each missing panel by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777	20	300 lb / 137 kg	500 lb / 227 kg	300 lb / 137 kg

57-26-05 Outboard Flap Track Fairing A121244

One may be missing. The aft segment should be removed if the forward segment is missing.

Reduce performance limited weights for a missing fairing by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777-200 GE90-76B thru 85B	4	2950 lb / 1338 kg	4950 lb / 2245 kg	2000 lb / 907 kg
777-200 GE90-90B	4	3300 lb / 1496 kg	5600 lb / 2540 kg	3300 lb / 1496 kg
777-200 GE90-94B	4	3300 lb / 1496 kg	6550 lb / 2971 kg	2000 lb / 907 kg
777-200 PW4074 thru PW4084	4	2650 lb / 1202 kg	6550 lb / 2971 kg	2000 lb / 907 kg
777-200 PW4090	4	2950 lb / 1338 kg	5900 lb / 2676 kg	2000 lb / 907 kg
777-200 RR875 thru RR884	4	2300 lb / 1043 kg	4950 lb / 2245 kg	2000 lb / 907 kg
777-200 RR892	4	3600 lb / 1632 kg	5600 lb / 2540 kg	2300 lb / 1043 kg
777-200 RR895	4	2650 lb / 1202 kg	5600 lb / 2540 kg	3600 lb / 1632 kg
777-300 PW4090	4	2650 lb / 1202 kg	5900 lb / 2676 kg	2000 lb / 907 kg
777-300 RR892/RR884	4	2650 lb / 1202 kg	5250 lb / 2381 kg	2000 lb / 907 kg
777-300ER	4	2800 lb / 1271 kg	5900 lb / 2676 kg	2000 lb / 907 kg
777-200LR/F	4	2950 lb / 1338 kg	5600 lb / 2540 kg	2650 lb / 1203 kg
777-300 PW4098	4	4000 lb / 1814 kg	5900 lb / 2676 kg	2000 lb / 907 kg

57-26-06 Outboard Flap Track Fairing Seal A162928

Eight (up to 4 on each side) may be missing.

Reduce performance limited weights for each foot of missing seal by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777	32	100 lb / 46 kg	150 lb / 69 kg	100 lb / 46 kg

57-26-07 Outboard Flap Auxiliary Track Fairing A121244

One may be missing.

Reduce performance limited weights by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777	2	Negligible	150 lb / 68 kg	Negligible

57-26-08 Outboard Flap Auxiliary Track Fairing Seal A162928

Two may be missing.

Reduce performance limited weights for each foot of missing seal by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777	4	50 lb / 23 kg	50 lb / 23 kg	50 lb / 23 kg

57-26-09 Inboard Flap Track Flaperon Fairing Seals A162928

Any number may be missing. There are 6 aft seals, 2 intermediate seals, and 10 forward seals.

Note:

1. For missing seals on both wings, the performance limited weight reductions are doubled.
2. For missing forward seal(s), the associated aft seals must be removed.

Reduce performance limited weights for one or more missing seals per wing by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777	18	400 lb / 182 kg	650 lb / 295 kg	No decrement

57-26-10 Inboard Flap Inboard Fairing - Aft Segment A121244

Two may be missing.

Reduce performance limited weights for each missing fairing by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777	2	150 lb / 68 kg	250 lb / 113 kg	150 lb / 68 kg

57-31-01 Wing Tip Access Panel A121244

Any number may be missing.

Not allowed for 777-300ER/200LR/F.

Reduce performance limited weights by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777-200/300	4	Negligible	Negligible	Negligible

57-31-02 Wing Tip Fairing A121244

One may be missing.

Not allowed for 777-300ER/200LR/F.

Reduce performance limited weight by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777-200 GE90-76B thru 85B	2	17950 lb / 8141 kg	5600 lb / 2540 kg	11950 lb / 5420 kg
777-200 GE90-90B	2	19950 lb / 9049 kg	6300 lb / 2858 kg	19900 lb / 9026 kg
777-200 GE90-94B	2	19950 lb / 9049 kg	7400 lb / 3356 kg	11950 lb / 5420 kg
777-200 PW4074 thru PW4084	2	15950 lb / 7235 kg	7400 lb / 3356 kg	11950 lb / 5420 kg
777-200 PW4090	2	17950 lb / 8141 kg	6700 lb / 3039 kg	11950 lb / 5420 kg
777-200 RR875 thru RR884	2	13950 lb / 6328 kg	5600 lb / 2540 kg	11950 lb / 5420 kg
777-200 RR892	2	21900 lb / 9933 kg	6300 lb / 2858 kg	13950 lb / 6328 kg
777-200 RR895	2	15950 lb / 7235 kg	6300 lb / 2858 kg	21900 lb / 9933 kg
777-300 PW4090	2	15950 lb / 7235 kg	6700 lb / 3039 kg	11950 lb / 5420 kg
777-300 RR892	2	15950 lb / 7235 kg	5950 lb / 2699 kg	11950 lb / 5420 kg
777-300 PW4098	2	24000 lb / 10886 kg	6700 lb / 3039 kg	11950 lb / 5420 kg

57-31-03 Raked Tip A162928

Both must be removed.

For 777-300ER:

1. For raked wingtips removed, increase the following speeds by 2 knots: V_R, V_2, V_{REF}.
2. The Cruise Maneuver Capability charts for raked tip removed are provided in this section.
3. Night time operation with the raked wingtips removed is prohibited.
4. Reduce Takeoff performance limited weights by 25,100 lb (11,385 kg).
5. Reduce Landing performance limited weights by 57,500 lb (26,081 kg).
6. Reduce Enroute performance limited weights by 11,700 lb (5,307 kg).
7. Reduce Maximum Quick Turnaround limited weights by 6,900 lb (3,129 kg).
8. Structural Weight are limited to:
   MTW = 662,000 lb (300,277 kg)
   MTOW = 660,000 lb (299,370 kg)
   MLW = 524,000 lb (237,682 kg)
   MZFW = 495,000 lb (224,528 kg)
8. Aft cg limit for GW > 633,000 lb (287,123 kg) = 38.5%

For 777-200LR/F:

1. For raked wingtips removed, increase the following speeds by 2 knots: V_R, V_2, V_{REF}.
2. Decrease the cruise maneuver capability altitude by 1,000 feet.
3. Night time operation with the raked wingtips removed is prohibited.
4. Reduce Takeoff performance limited weights by 26,300 lb (11,929 kg).
5. Reduce Enoute performance limited weights by 11,800 lb (5,352 kg).
6. Reduce Approach and Landing performance limited weights by 21,300 lb (9,662 kg).
7. Reduce Landing Field Length performance limited weights by 151,000 lb (68,492 kg) or increase landing field length by 230 ft (71 m).
8. Reduce Maximum Quick Turnaround performance limited weights by 7,400 lb (3,357 kg).
9. Structural Weight are limited to:
   MTW = 658,000 lb (298,463 kg)
   MTOW = 656,000 lb (297,556 kg)
   MLW = 470,000 lb (213,188 kg)
   MZFW = 440,000 lb (199,580 kg)
10. Forward and aft center of gravity restrictions for gross weight with raked tip removed are provided in this section.

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Chart weight in pounds

PERFORMANCE

CRUISE MANEUVERING CAPABILITY

RAKED WINGTIP REMOVED

FLAPS AND GEAR UP

■ EXAMPLE:

TRUE MACH NUMBER, M_T = 0.82
PRESSURE ALTITUDE = 34,000 FT.
CENTER OF GRAVITY = 30 PERCENT MAC
GROSS WEIGHT = 730,000 LB.

MANEUVER MARGIN TO INITIAL BUFFET:
NORMAL ACCELERATION = 1.143 G
BANK ANGLE, Φ, = 29.0 DEGREES

INITIAL BUFFET FOR 1G FLIGHT:
PRESSURE ALTITUDE = 36,800 FT.
LOW SPEED, M_T = 0.733
HIGH SPEED, M_T = 0.888

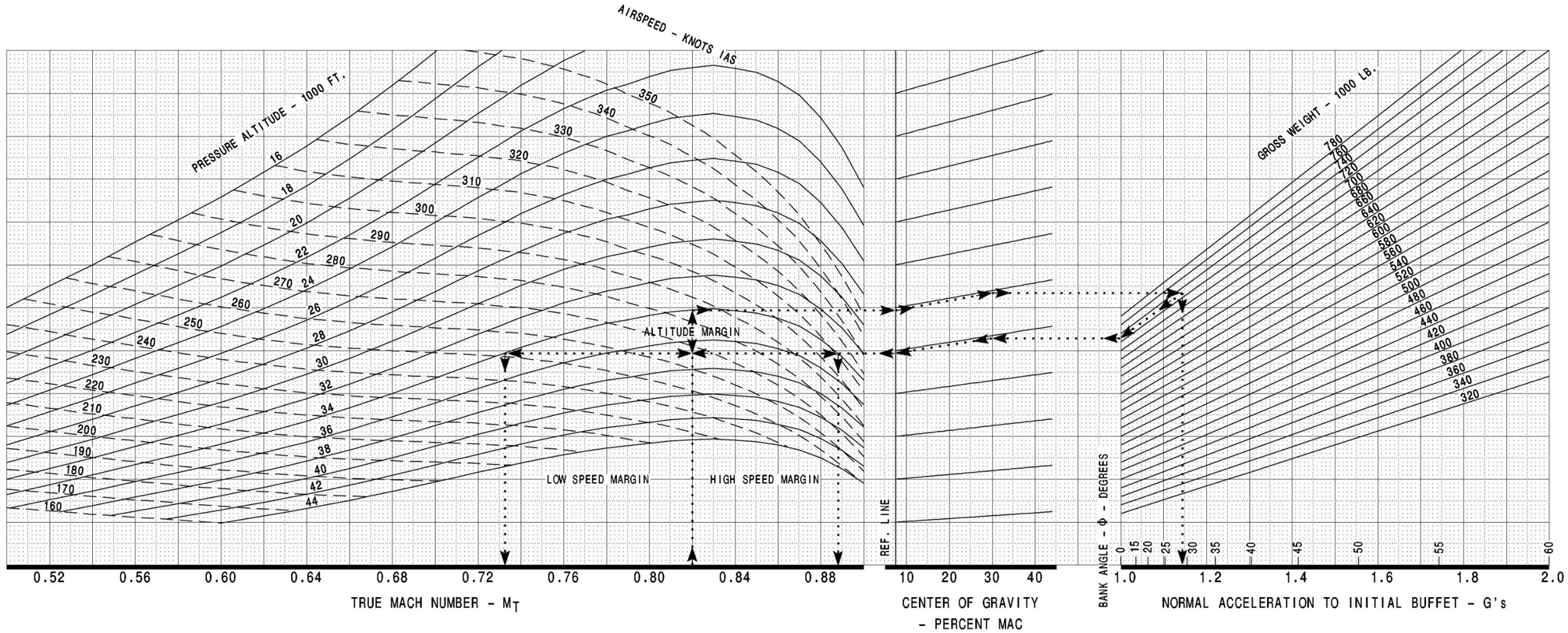

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Chart weight in kilograms

PERFORMANCE

CRUISE MANEUVERING CAPABILITY

RAKED WINGTIP REMOVED

FLAPS AND GEAR UP

■ EXAMPLE:

TRUE MACH NUMBER, M_T = 0.82
PRESSURE ALTITUDE = 34,000 FT.
CENTER OF GRAVITY = 30 PERCENT MAC
GROSS WEIGHT = 330,000 KG.

MANEUVER MARGIN TO INITIAL BUFFET:
NORMAL ACCELERATION = 1.148 G
BANK ANGLE, Φ, = 29.4 DEGREES

INITIAL BUFFET FOR 1G FLIGHT:
PRESSURE ALTITUDE = 36,900 FT.
LOW SPEED, M_T = 0.732
HIGH SPEED, M_T = 0.888

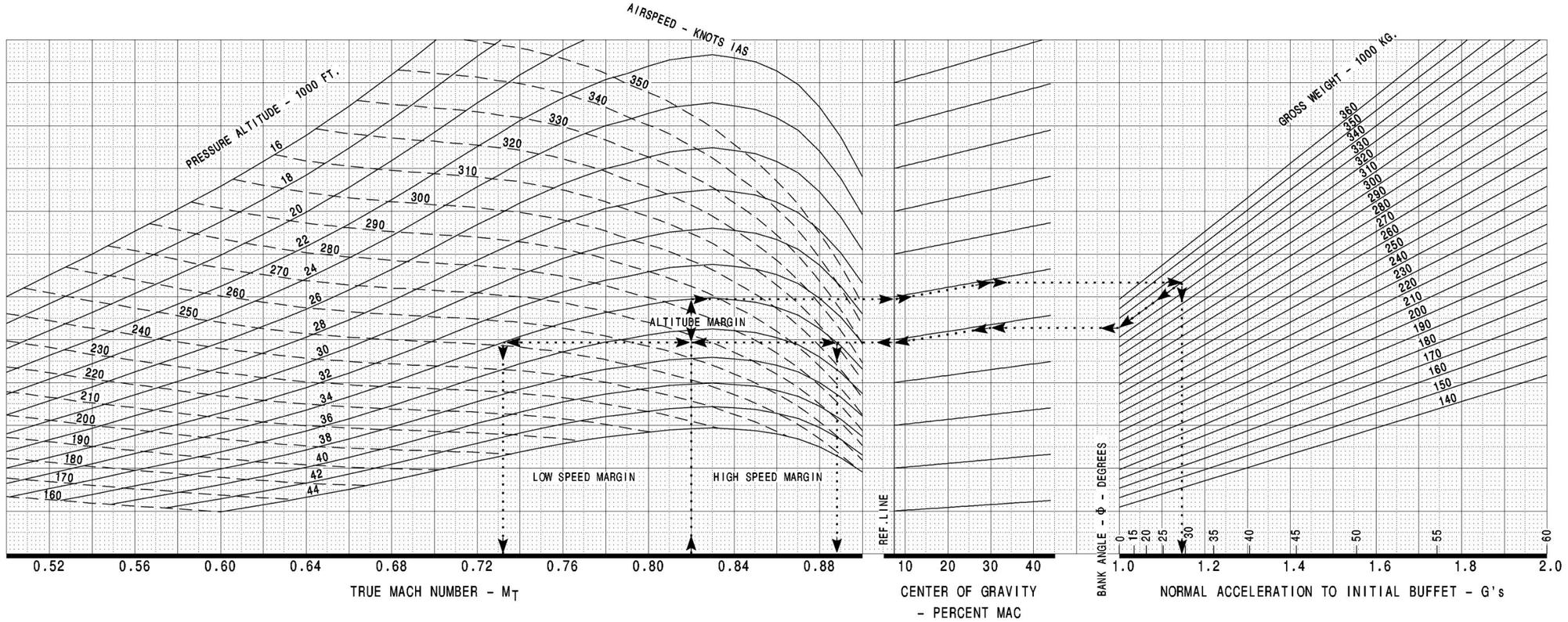

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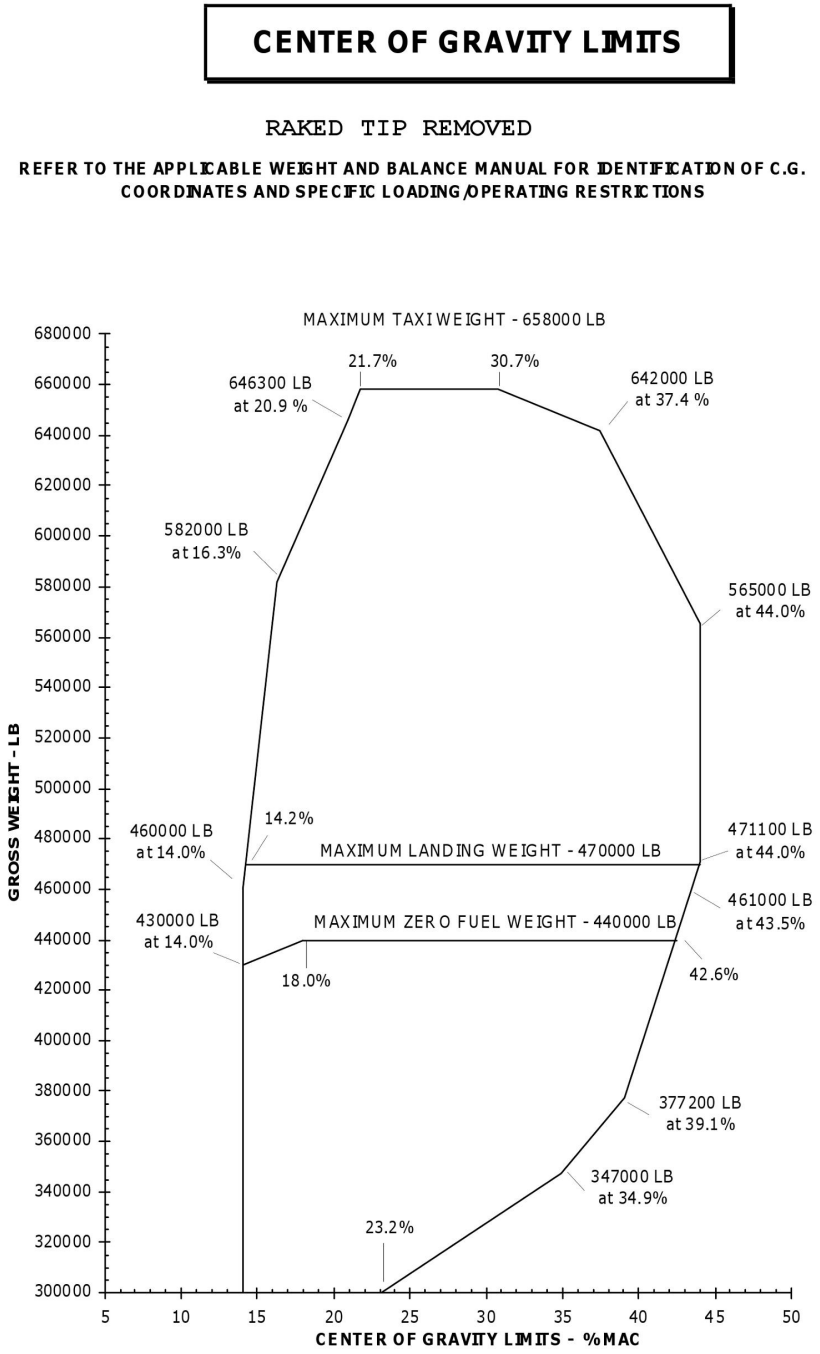
Chart weight in pounds



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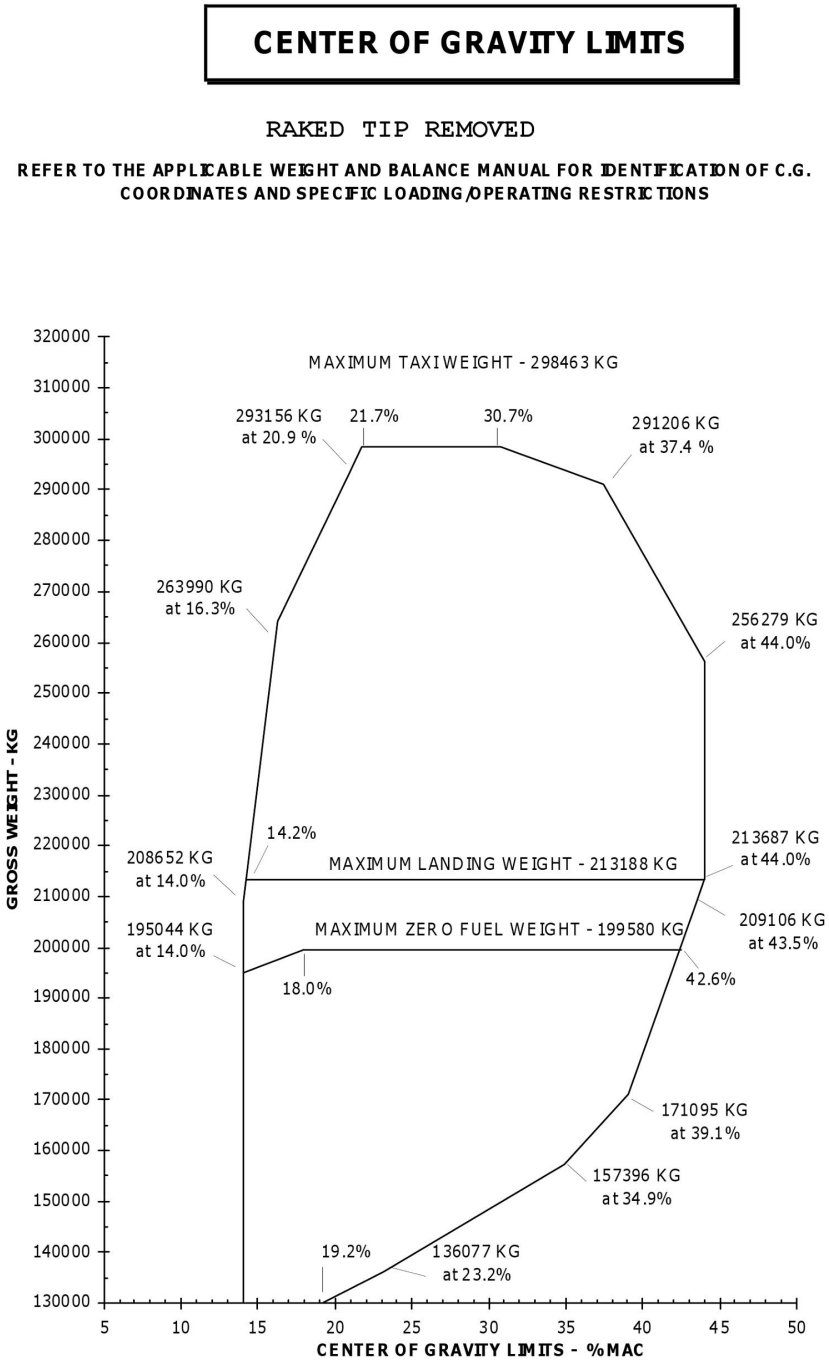
Section 57-31-03 Raked Tip, continued from previous page A162928

Chart weight in kilograms



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57-41-01 Outboard Leading Edge Slat Restoration Seal Assembly A162928

Two (one on each side; they must be symmetric) may be missing.

Increase V_{REF} by 2 knots.

Reduce performance limited weight for one symmetrical set missing by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing	Landing Field Length	Max Quick Turnaround
777-200 GE90-76B thru 85B	24	5400 lb / 2449 kg	No decrement	3600 lb / 1632 kg	14100 lb / 6396 kg or increase landing field length by 150 ft / 46 m	6000 lb / 2722 kg
777-200 GE90-90B	24	6000 lb / 2721 kg	No decrement	6000 lb / 2721 kg	14100 lb / 6396 kg or increase landing field length by 150 ft / 46 m	6000 lb / 2722 kg
777-200 GE90-94B	24	6000 lb / 2721 kg	No decrement	3600 lb / 1632 kg	14100 lb / 6396 kg or increase landing field length by 150 ft / 46 m	6000 lb / 2722 kg
777-200 PW4074 thru PW4084	24	4800 lb / 2177 kg	No decrement	3600 lb / 1632 kg	14100 lb / 6396 kg or increase landing field length by 150 ft / 46 m	6000 lb / 2722 kg
777-200 PW4090	24	5400 lb / 2449 kg	No decrement	3600 lb / 1632 kg	14100 lb / 6396 kg or increase landing field length by 150 ft / 46 m	6000 lb / 2722 kg
777-200 RR875 thru RR884	24	4200 lb / 1905 kg	No decrement	3600 lb / 1632 kg	14100 lb / 6396 kg or increase landing field length by 150 ft / 46 m	6000 lb / 2722 kg
777-200 RR892	24	6600 lb / 2993 kg	No decrement	4200 lb / 1905 kg	14100 lb / 6396 kg or increase landing field length by 150 ft / 46 m	6000 lb / 2722 kg
777-200 RR895	24	4800 lb / 2177 kg	No decrement	6600 lb / 2293 kg	14100 lb / 6396 kg or increase landing field length by 150 ft / 46 m	6000 lb / 2722 kg
777-300 PW4090	24	4800 lb / 2177 kg	No decrement	3600 lb / 1632 kg	14100 lb / 6396 kg or increase landing field length by 150 ft / 46 m	6000 lb / 2722 kg
777-300 PW4098	24	7200 lb / 3,265 kg	No decrement	3600 lb / 1632 kg	14100 lb / 6396 kg or increase landing field length by 150 ft / 46 m	6000 lb / 2722 kg

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Section 57-41-01 Outboard Leading Edge Slat Restoration Seal Assembly, continued from previous page A162928

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing	Landing Field Length	Max Quick Turnaround
777-300 RR892	24	4800 lb / 2177 kg	No decrement	3600 lb / 1632 kg	14100 lb / 6396 kg or increase landing field length by 150 ft / 46 m	6000 lb / 2722 kg
777-300ER	26	5100 lb / 2314 kg	No decrement	3600 lb / 1633 kg	16400 lb / 7438 kg	13400 lb / 6078 kg
777-200LR/F	26	5400 lb / 2450 kg	No decrement	4800 lb / 2178 kg	155000 lb / 70307 kg or increase landing field length by 230 ft / 71 m	13400 lb / 6078 kg

57-41-02 Wing Fixed Leading Edge Lower Panel A162928

Four (up to two on each side) may be missing.

Reduce performance limited weight for each missing panel by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777-200/-300 Outboard Panels	52	250 lb / 114 kg	350 lb / 159 kg	200 lb / 91 kg
777-200/-300 Inboard Panels	18	850 lb / 386 kg	1350 lb / 613 kg	750 lb / 341 kg
777-300ER Outboard Panels	56	150 lb / 69 kg	350 lb / 159 kg	150 lb / 69 kg
777-300ER Inboard Panels	18	600 lb / 273 kg	1250 lb / 567 kg	450 lb / 205 kg
777-200LR/F Outboard Panels	56	200 lb / 91 kg	300 lb / 137 kg	150 lb / 69 kg
777-200LR/F Inboard Panels	18	650 lb / 295 kg	1150 lb / 522 kg	550 lb / 250 kg

57-41-03 Slat Linkage Fairing Panel A162928

Twelve (up to six on each side) may be missing.

Reduce performance limited weight for each missing panel by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777-200/300	32	Negligible	Negligible	No decrement
777-300ER/200LR/F	34	Negligible	Negligible	No decrement

57-41-04 Slat Spanwise Flow Seal A162928

Four (up to two on each side) may be missing.

Reduce performance limited weight for each missing seal by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777	28	Negligible	200 lb / 91 kg	No decrement

57-41-05 Outboard Slat Spanwise Bulb Seal A162928

Two (one per side) may be missing.

Reduce performance limited weight for each foot of missing seal by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777-200/300 PW/GE	12	350 lb / 159 kg	600 lb / 273 kg	No decrement
777-200/300 RR	12	350 lb / 159 kg	500 lb / 227 kg	No decrement
777-300ER/200LR/F	12	300 lb / 137 kg	550 lb / 250 kg	No decrement

57-41-06 Slat Spanwise Lower Flexible Seal A162928

Eight (up to four on each side) may be missing.

Reduce performance limited weight for each missing seal by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777-200/300	40	Negligible	Negligible	No decrement
777-300ER/200LR/F	42	Negligible	Negligible	No decrement

57-41-08 Inboard Slat Inboard End Bulb Seal A121244

Any number may be missing.

Reduce performance limited weight for each missing seal by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777	4	150 lb / 69 kg	250 lb / 113 kg	150 lb / 69 kg

57-41-09 Krueger End Seal A162928

Any number may be missing.

Reduce performance limited weight for each missing seal by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777-200 RR875 thru 884	6	1050 lb / 477 kg	Negligible	900 lb / 409 kg
777-200 PW/RR895	6	1350 lb / 613 kg	Negligible	1650 lb / 749 kg
777-200 RR892	6	1650 lb / 749 kg	Negligible	1050 lb / 477 kg
777-200 GE	6	1500 lb / 681 kg	Negligible	1500 lb / 681 kg
777-300 PW4090/RR	6	1200 lb / 545 kg	Negligible	900 lb / 409 kg
777-300 PW4098	6	1800 lb / 817 kg	Negligible	900 lb / 409 kg
777-300ER	6	1300 lb / 590 kg	Negligible	900 lb / 409 kg
777-200LR/F	6	1350 lb / 613 kg	Negligible	1200 lb / 545 kg

57-41-23 Inboard Slat Inboard End Blade Seal A211964

One or both may be missing.

Note:

1. Seal may be missing only below the crossing Inboard End Bulb Seal (CDL item 57-41-08).
2. Seal may not be missing in combination with items CDL 57-41-06 or CDL 57-41-08.

Reduce performance limited weight for each missing seal by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777	2	Negligible	Negligible	No decrement

57-51-01 Wing Fixed Trailing Edge Lower Panel A164397

Four (up to two on each side) may be missing.

Note:
1. For missing panels forward of the inboard flaps, limit speed to 270 KIAS / 0.73 Mach.
2. If "ALTERNATE GEAR DOWN DISPATCH" switch is installed, then switch must be placed in the V_{MO} position.
3. Combinations with missing parts from sub-system 32-12 and this part are not authorized.

Reduce performance limited weight for each missing panel by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777-200 GE90-76B thru 85B	30	5750 lb / 2609 kg	9550 lb / 4332 kg	150 lb / 69 kg
777-200 GE90-90B	30	6350 lb / 2881 kg	10800 lb / 4899 kg	250 lb / 114 kg
777-200 GE90-94B	30	6350 lb / 2881 kg	12700 lb / 5761 kg	150 lb / 69 kg
777-200 RR875 thru RR884	30	4450 lb / 2019 kg	9550 lb / 4332 kg	150 lb / 69 kg
777-200 RR892	30	7000 lb / 3176 kg	10800 lb / 4899 kg	200 lb / 114 kg
777-200 RR895	30	5100 lb / 2314 kg	10800 lb / 4899 kg	300 lb / 137 kg
777-200 PW4074 thru PW4084	30	5100 lb / 2314 kg	12700 lb / 5761 kg	150 lb / 69 kg
777-200 PW4090	30	5750 lb / 2609 kg	11450 lb / 5194 kg	150 lb / 69 kg
777-300 RR884 or RR892	30	5100 lb / 2314 kg	10150 lb / 4604 kg	150 lb / 69 kg
777-300 PW4090	30	5100 lb / 2314 kg	11450 lb / 5194 kg	150 lb / 69 kg
777-300 PW4098	30	7650 lb / 3470 kg	11450 lb / 5194 kg	150 lb / 69 kg
777-300ER	30	5400 lb / 2450 kg	11450 lb / 5194 kg	150 lb / 69 kg
777-200LR/F	30	5750 lb / 2609 kg	10800 lb / 4899 kg	200 lb / 114 kg

57-51-02 Inboard Flap Inboard Seal A180399

Any number may be missing.

Reduce performance limited weight for each foot of missing seal by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777-200/300	6	300 lb / 137 kg	450 lb / 205 kg	700 lb / 318 kg
777-300ER/200LR/F	6	200 lb / 91 kg	400 lb / 182 kg	500 lb / 227 kg

57-51-03 Overwing Fairing Torque Tube Door A121244

Both may be missing.

Reduce performance limited weight for each missing door by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777-200 PW/GE/RR	2	No decrement	No decrement	7050 lb / 3198 kg
777-200 RR892	2	No decrement	No decrement	8200 lb / 3719 kg
777-200 GE90B	2	No decrement	No decrement	11750 lb / 5329 kg
777-200 RR895	2	No decrement	No decrement	12900 lb / 5851 kg
777-300 PW/RR	2	No decrement	No decrement	7050 lb / 3198 kg
777-300ER	2	No decrement	No decrement	7050 lb / 3198 kg
777-200LR/F	2	No decrement	No decrement	9400 lb / 4264 kg

57-51-04 Number 3 and 6 Flap Fairings Seals A121244

Fourteen (up to seven per wing), this includes the hinge assembly to which the aft most seal is attached, may be missing.

Note: For one or more missing seals on both wings, the performance limited weight reductions are doubled.

Reduce performance limited weight for up to seven missing seals by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777	20	150 lb / 68 kg	250 lb / 113 kg	No decrement

57-53-01 Flaperon Inboard Seal A121244

Any number may be missing.

Reduce performance limited weight for each foot of missing seal by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777	12	200 lb / 91 kg	350 lb / 159 kg	200 lb / 91 kg

57-53-02 Inboard Flap Leading Edge Seal A121244

Four (up to two on each side) may be missing.

Reduce performance limited weight for each foot of missing seal by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777	20	150 lb / 68 kg	250 lb / 113 kg	No decrement

57-53-03 Outboard Flap Leading Edge Seal A121244

Two (one per side) may be missing.

Reduce performance limited weight for each foot of missing seal by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777	8	150 lb / 68 kg	250 lb / 113 kg	No decrement

57-63-02 Flaperon Cove Lip Door Streamwise Seal A121244

Any number may be missing.

Reduce performance limited weight for each missing seal by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777	4	Negligible	150 lb / 68 kg	No decrement

57-63-03 Flaperon Cove Lip Door Hingewise Seal A162928

One may be missing.

Reduce the performance limited weight by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777-200 GE90-76B thru 85B	2	1000 lb / 454 kg	1700 lb / 771 kg	No decrement
777-200 GE90-90B	2	1100 lb / 499 kg	1900 lb / 862 kg	No decrement
777-200 GE90-94B	2	1100 lb / 499 kg	2200 lb / 998 kg	No decrement
777-200 RR875 thru RR884	2	800 lb / 363 kg	1700 lb / 771 kg	No decrement
777-200 RR892	2	1250 lb / 567 kg	1900 lb / 862 kg	No decrement
777-200 RR895	2	900 lb / 409 kg	1900 lb / 862 kg	No decrement
777-200 PW4074 thru PW4084	2	900 lb / 409 kg	2200 lb / 998 kg	No decrement
777-200 PW4090	2	1000 lb / 454 kg	2000 lb / 908 kg	No decrement
777-300 RR892	2	900 lb / 409 kg	1800 lb / 817 kg	No decrement
777-300 PW4090	2	900 lb / 409 kg	2000 lb / 908 kg	No decrement
777-300 PW4098	2	1350 lb / 612 kg	2000 lb / 908 kg	No decrement
777-200LR/F/300ER	2	1000 lb / 453 kg	2000 lb / 908 kg	No decrement

57-63-04 Flaperon Outboard Seal A121244

Any number may be missing.

Reduce performance limited weight for each foot of missing seal by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777	4	200 lb / 91 kg	350 lb / 159 kg	200 lb / 91 kg

57-63-05 Aileron Streamwise Seal A121244

Any number may be missing.

Reduce performance limited weight for each foot of missing seal by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777	8	200 lb / 91 kg	300 lb / 136 kg	200 lb / 91 kg

57-63-06 Aileron Power Control Unit Fairing A121244

Both fairings may be missing.

Reduce performance limited weight by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777	2	Negligible	Negligible	Negligible

57-63-07 Aileron Mass Balance Seal A162928

Any number may be missing.

Reduce performance limited weight for each foot of missing seal.

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777	12	50 lb / 23 kg	100 lb / 46 kg	50 lb / 23 kg

57-63-08 Aileron Hinge Blade Seal A180391

All may be missing. Penalty shown is per missing item.

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777-200/-300	6	200 lb / 91 kg	150 lb / 69 kg	150 lb / 69 kg
777-200LR/-300ER/F	8	150 lb / 69 kg	150 lb / 69 kg	150 lb / 69 kg

57-63-09 Aileron Hinge Blade Seal and Seal Retainer A180391

All may be missing. Penalty shown is per missing item.

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777-200/-300	6	500 lb / 227 kg	400 lb / 182 kg	450 lb / 205 kg
777-200LR/-300ER/F	8	350 lb / 159 kg	350 lb / 159 kg	350 lb / 159 kg

57-71-01 Spoiler Streamwise Seal A121244

Four (up to two on each side) may be missing.

Reduce performance limited weight for each missing seal by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777	28	600 lb / 272 kg	1000 lb / 454 kg	600 lb / 272 kg

57-71-02 Spoiler Leading Edge Seal A121244

Two (one per side) may be missing.

Reduce performance limited weight for each foot of missing seal by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777	36	150 lb / 68 kg	250 lb / 113 kg	150 lb / 68 kg

71-11-01 Oil Tank Sight Glass Door and Pressure Relief Door A121244

Both may be missing.

Reduce performance limited weight by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777 PW	2	Negligible	Negligible	Negligible

71-11-02 Engine Cowl Inlet Streamwise Aerofiller A121244

Both may be missing.

Reduce performance limited weight by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777	2	Negligible	Negligible	Negligible

71-11-03 Fan Cowl Pressure Relief Door A121244

Both may be missing.

Note : For 777-300ER/200LR/F, not applicable to GE90-100 Series engines.

Reduce performance limited weight by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777 GE	2	Negligible	Negligible	Negligible

71-11-04 Oil Tank Access Door A121244

Both may be missing.

Reduce performance limited weight for each missing door by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777 GE	2	Negligible	200 lb / 91 kg	Negligible

71-11-05 Fan Cowl Hoist Point Plugs A121244

Any number may be missing.

Reduce performance limited weight for each missing plug by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777 PW/GE	12	Negligible	Negligible	Negligible

72-00-01 Debris Shield A121244

One may be missing from the right engine.

Reduce performance limited weight by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777 PW	2	No decrement	No decrement	No decrement

78-31-01 Thrust Reverser Sleeve Actuator Access Panel A121244

For PW or GE eight (up to two on each nacelle half) may be missing. The top panel on each nacelle half may not be missing.

For RR four (up to one on each nacelle half) may be missing. Only the middle panel on each nacelle half may be missing.

Reduce performance limited weight by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777 PW/GE	12	Negligible	Negligible	Negligible
777 RR	12	Negligible	Negligible	Negligible

78-31-02 Thrust Reverser Blocker Door A162928

One door may be missing from each nacelle half.

Reduce performance limited weight for each missing door by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777-200/300 GE	32	950 lb / 430 kg	750 lb / 340 kg	750 lb / 340 kg
777-200/300 PW	24	1150 lb / 521 kg	1250 lb / 566 kg	1150 lb / 521 kg
777-200/300 RR	24	1050 lb / 476 kg	600 lb / 272 kg	800 lb / 362 kg
777-300ER	32	1650 lb / 749 kg	1400 lb / 636 kg	1550 lb / 704 kg
777-200LR/F	32	2050 lb / 930 kg	1350 lb / 613 kg	2000 lb / 908 kg

On Wet/Contaminated Runways for one or two missing doors, reduce performance limited weights by:

Applicable Models	Number Installed	Takeoff Wet		Takeoff Contaminated		Landing Contaminated	
		One Door	Two Doors	One Door	Two Doors	One Door	Two Doors
777-300ER	32	12,550 lb 5693 kg	36,000 lb 16,330 kg	26,250 lb 11,907 kg	77,100 lb 34,972 kg	21,000 lb 9526 kg	63,000 lb 28,577 kg
777-200LR/F	32	12,250 lb 5557 kg	34,700 lb 15,740 kg	25,050 lb 11,363 kg	73,100 lb 33,158 kg	26,500 lb 12,021 kg	79,500 lb 36,061 kg

78-31-03 Thrust Reverser Cascade Segment A121244

Up to 6 segments on one engine may be missing.

There is no performance decrement, provided:

1. Segments are missing from one engine only and associated trust reverser is deactivated for dispatch.
2. No two adjacent segments are missing.
3. Top and bottom segments remain in place.

Reduce performance limited weight by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777	32	No decrement	No decrement	No decrement

78-31-04 Thrust Reverser Wedge Fairing A162928

Two fairings may be missing from each nacelle half.

Note:

1. On later PW series thrust reversers (P/N 315W3298), the Thrust Reverser Wedge Fairings may not be missing because they are integrated with the thrust reverser outer wall structure and are non-removable.
2. For 777-300ER/200LR/F, not applicable to GE90-100 Series engines.

Reduce performance limited weight for each missing fairing by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777 PW/RR	28	250 lb / 114 kg	250 lb / 114 kg	250 lb / 114 kg
777 GE	36	200 lb / 91 kg	150 lb / 69 kg	150 lb / 69 kg

78-31-05 Thrust Reverser Blocker Door Seals A121244

Seven may be missing.

Reduce performance limited weight by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777 PW/RR	24	Negligible	Negligible	Negligible
777 GE	32	Negligible	Negligible	Negligible

78-31-06 Thrust Reverser Hinge Beam Forward Fairing Access Door A180399

For GE90-90 Series Engines

Any number of access doors may be missing.

Note:
1. Access doors from the Mid and Aft Fairings may not be missing.

Reduce performance limited weights for each missing door by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777-200	4 (2 per strut)	Negligible	200 lb / 91 kg	Negligible

For GE90-100 Series Engines

Any number of aft access doors from the forward fairing may be missing.

Note.
1. Forward access doors from the forward fairing and access doors from the Mid and Aft Fairings may not be missing.

Reduce performance limited weights for each missing door by:

Applicable Models	Number Installed	Takeoff	Enroute Climb	Approach and Landing
777-300ER/ -200LR/F	8 (4 per strut)	Negligible	200 lb / 91 kg	Negligible

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